11-5815-606-12

TM 11-5815-606-12

TECHNICAL MANUAL

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL

TELEPRINTER SETS,
AN/GGR-3A(V)1 (NSN 5815-01-016-4662),
AN/GGR-3A(V)2 (NSN 5815-01-023-0995),
AN/GGR-3A(V)3 (NSN 5815-01-010-3484),
AN/GGR-3A(V)8 (NSN 5815-01-023-0996),
AN/GGR-3A(V)11 (NSN 5815-01-072-1293),
AN/GGR-3A(V)12 (NSN 5815-01-023-0995)
AND

TELETYPEWRITER-DISPLAY SETS,
AN/GGC-55(V)1 (NSN 5815-01-009-4322),
AN/GGC-55(V)2 (NSN 5815-01-023-0676)
AND

TELETYPEWRITER-TELEPRINTER SETS,
AN/GGC-57A(V)3 (NSN 5815-01-009-4321),
AN/GGC-57A(V)4 (NSN 5815-01-023-0027),
AN/GGC-57A(V)8 (NSN 5815-01-023-0675)
AND

TELETYPEWRITER-DISPLAY-TELEPRINTER SETS,
AN/GGC-59(V)1 (NSN 5815-01-015-0838),
AN/GGC-59(V)3 (NSN 5815-01-017-0296),
AN/GGC-59(V)5 (NSN 5815-01-023-0234)
AND

TELETYPEWRITER SET
AN/GGC-62(V)5 (NSN 5815-01-071-8446),
AN/GGC-62(V)6 (NSN 5815-01-066-5931),
AN/GGC-62(V)7 (NSN 5815-01-071-8445)

HEADQUARTERS, DEPARTMENT OF THE ARMY

D 101.11:

READEX FICHE best copy available

JANUARY 1983

WARNING

- Dangerous voltages exist within the Tempest Model 40 Data Terminal. Contact with the internal circuitry can result in electrical shock and should be avoided whenever possible. Turn off power and signal sources before removing or replacing any component. Insure proper grounding of Model 40 Data Terminal after replacing components. In the event of electrical shock, administer first aid for shock and apply artificial respiration and seek medical attention immediately.

- The monitor display tube is fragile in the neck area and is subject to implosion, if broken. Be careful not to strike the glass of the tube with tools or components when working in its vicinity. Wear approved safety glasses when the housing of the monitor is removed.

- For artificial respiration and shock treatment, refer to FM 21-11.

TECHNICAL MANUAL
No. 11-5815-606-12

Headquarters
Department of the Army
Washington, DC, 18 January 1983

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AND
TELETYPEWRITER-DISPLAY-TELEPRINTER SETS,
AN/GGC-59(V)1 (NSN 5815-01-015-0838),
AN/GGC-59(V)3 (NSN 5815-01-017-0296),
AN/GGC-59(V)5 (NSN 5815-01-023-0234)
AND
TELETYPEWRITER SET
AN/GGC-62(V)5 (NSN 5815-01-071-8446),
AN/GGC-62(V)6 (NSN 5815-01-066-5931),
AN/GGC-62(V)7 (NSN 5815-01-071-8445)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or know of a way to improve the procedures, please let me know. Mail your DA form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to Commander, US Army Communications-Electronics Command and Fort Monmouth ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. A reply will be furnished to you.

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HOW TO USE THIS MANUAL

- This technical manual covers the operation and maintenance procedures for the Tempest Model 40/8B Data Terminal.
- This manual has been prepared in an ascending numbered order of chapters, sections, and paragraphs.
- The chapters are numbered Chapter 1, Chapter 2, and Chapter 3. Each chapter contains sections given in Roman numeral order such as Section I, II, and III in Chapters 1 and 2 and such as Section I, II, III, IV, and V in Chapter 3.
- The paragraphs are in numerical order in each chapter. Each paragraph has the chapter number given before the sequential number of the paragraph. For example, Paragraph 1-1 is the first paragraph in Chapter 1. Paragraph 2-1 is the first paragraph in Chapter 2 and so on throughout the manual.
- A bullet (●) indicates additional information needed for the paragraph above it.

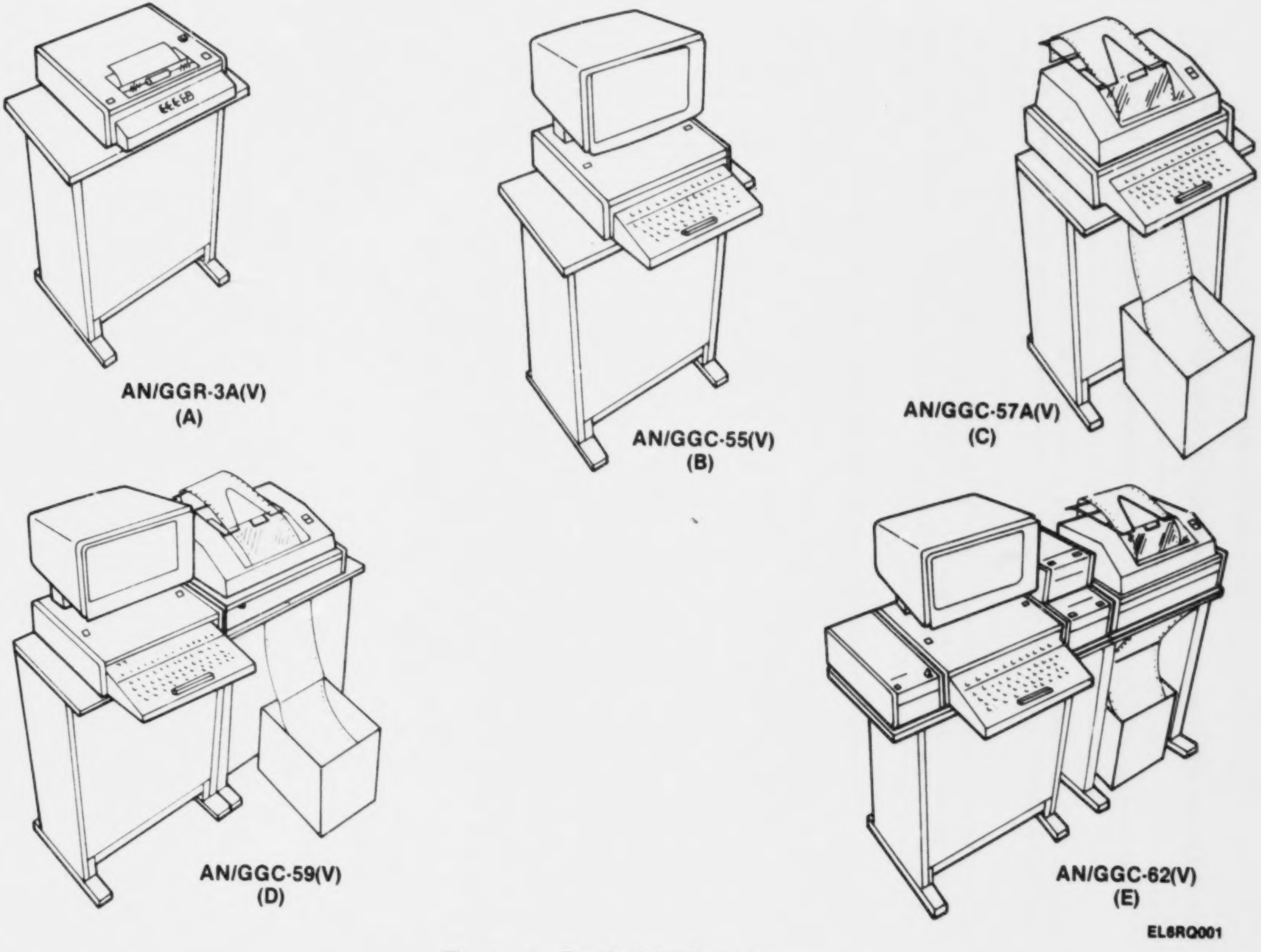


Figure 1-1. Terminal Configurations

CHAPTER I
INTRODUCTION

SECTION I. GENERAL

1.1. Scope.

a. This manual describes Tempest Model 40/8B Data Terminal configurations (fig. 1-1, pg. 1-0) AN/GGR-3A(V),AN/GGC-55A(V), AN/GCC-57(V), AN/GCC-59(V),AN/GCC-62(V). It covers installation, operation, and organization maintenance. The operation under unusual conditions, cleaning and inspection of equipment is also included.

b. The Tempest Model 40/8B Data Terminal is available in a rack mount configuration. (fig. 1-2, pg. 1-2). All configurations are intended for installation in customer provided racks. Rack mounting of existing pedestal mounted terminals requires mounting hardware and longer cables.

1-2. Consolidated Index of Army Publications and Blank Forms. Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes, or additional publications pertaining to this equipment.

1-3. Maintenance Forms, Record, and Reports.

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management System (TAMMS).

b. Report of Packaging and Handling Deficiencies. Fill out and forward Report of Discrepancy (ROD) (SF 364) as prescribed in AR 735-11-2/DLAR 4140.55/NAVMATINST 4355.73/AFR 400-54/MCO 4430.3E.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward DISREP (SF 361) as prescribed in AR55-38/NAVSUPINST 4610.33B/AFR 75-18/MCOP 4610.19C/DLAR 4500.15.

1-4. Destruction of Army Materiel to Prevent Enemy Use. Refer to TM 750-244-2 for procedures covering destruction of Army materiel to prevent enemy use.

1-5. Administrative Storage. Refer to TM 740-90-1 for administrative storage procedures.

1-6. Reporting Equipment Improvement Recommendations (EIRs). If your terminal needs improvement, let us know. Send us an EIR. You, the user are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth,ATTN: DRSEL-ME-MP, Fort Monmouth, New Jersey 07703. We will send you a reply.

SECTION II. DESCRIPTION AND TABULATED DATA

1-7. Purpose and Use.

a. Purpose. The communications terminals listed in paragraph 1-1(a) are used primarily to supply data communications, either half or full duplex, asynchronous or synchronous.

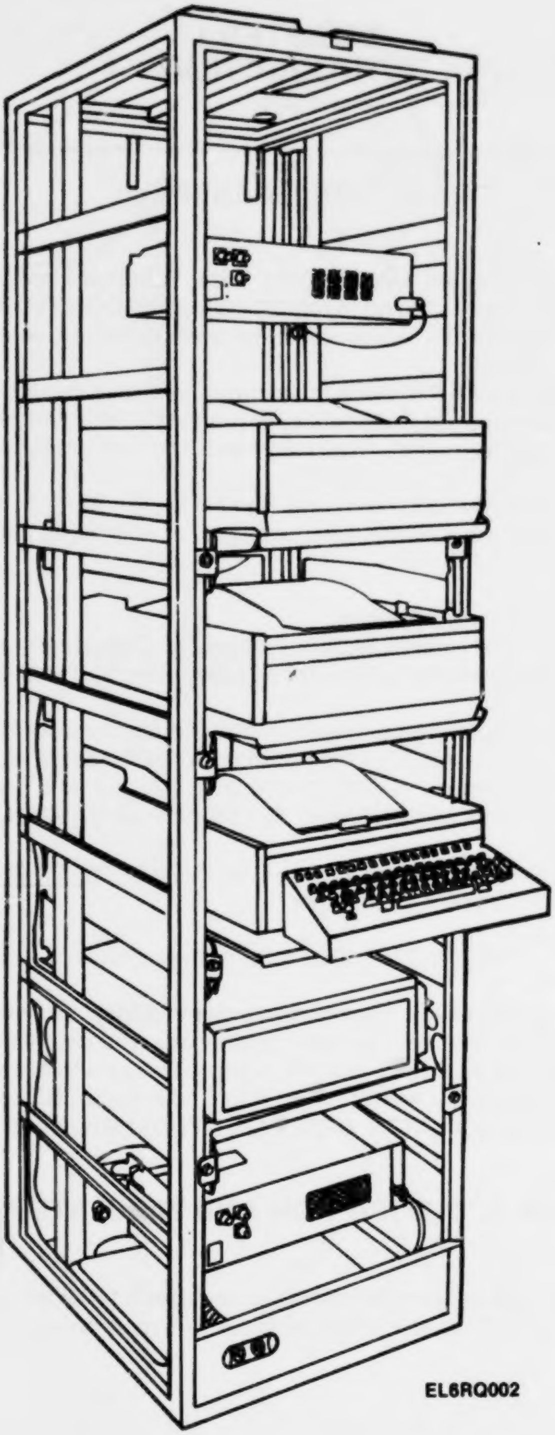


Figure 1-2. Rack-Mount Configuration

b. Use. The terminals are used to enter, display, store, edit, print, send and receive data communications. Speeds up to 9600 bauds (bits per second) are possible using either the (ITA2) Baudot or ITA5 ASCII codes.

1-8. Differences Between Models.

	MFR NO
a. AN/GGR-3A(V)1:	4010-8KOD
(1) PEDESTAL (SMALL)	40CAB903RJ
(2) CONTROLLER	40C432ABF027
(3) PRINTER CABINET	40CAB352RA
(4) TRACTOR FEED PRTR (up/low carrier,80 col)	40PI5IAB
(5) OPERATOR CONSOLE (STUBBY) (OPCON)	40K002RAA
b. AN/GRR-3A(V)2. Components same as (V)1 except:	4010-8KOD1
PEDESTAL	40CAB903RL
c. AN/GRR-3A(V)3. Components same as (V)1 except:	4010-8HOD
TRACTOR FEED PRTR (mono carrier,80 col)	40P151AA
d. AN/GRR-3A(V)8:	4010-8LOL1
(1) PEDESTAL 24" wide	40CAB903RP
(2) PRINTER CABINET	40CAB354RA
(3) TRACTOR FEED PRTR (mono carrier,132 col)	40P201AL
(4) OPCON	40K002RAA
(5) CONTROLLER	40C432ABF027
e. AN/GRR-3A(V)11:	4010-8ROD
(1) PEDESTAL	40CAB903RJ
(2) PRINTER CABINET	40CAB352RA
(3) TRACTOR FEED PRTR (up/low carrier,80 col)	40P154AB
(4) OPCON	40K002RAA
(5) CONTROLLER	40C432ABF027
f. AN/GRR-3A(V)12. Components same as (V)11 except:	4010-8ROD1
PEDESTAL	40CAB903RL
g. AN/GGC-55(V)1:	4025-8PWD
(1) PEDESTAL	40CAB903RK
(2) CONTROLLER	40C430ABD025
(3) OPCON CABINET	40CAB252RA
(4) OPCON	40K103RCA
(5) MONITOR	40MN202RA
h. AN/GGC-55(V)2. Components same as (V)1 except:	4025-8PWD1
PEDESTAL	40CAB903RM
i. AN/GGC-57A(V)3:	4020-8HOD
(1) PEDESTAL	40CAB903RK
(2) CONTROLLER	40C431ABE026
(3) PRINTER CABINET	40CAB352RA
(4) TRACTOR FEED PRTR (mono carrier,80 col)	40P151AA

	MFR NO
(5) OPCON	40K103RCC
(6) OPCON CABINET	40CAB252RA
j. AN/GGC-57A(V)4. Components same as (V)3 except:	4020-8HOD1
PEDESTAL	40CAB903RM
k. AN/GGC-57A(V)8. Components same as (V)4 except:	4020-8ROD1
TRACTOR FEED PRTR (up/low carrier,80 col)	40P154AB
l AN/GGC-59(V)1:	4030-8JWH
(1) PEDESTAL	40CAB903RK
(2) CONTROLLER	40C430ABD025
(3) PRINTER CABINET	40CAB202RC
(4) OPCON CABINET	40CAB252RA
(5) OPCON	40K103RCB
(6) PEDESTAL (PRINTER)	40CAB902AA
(7) TRACTOR FEED PRTR (up/low carrier,80 col)	40P151AB
(8) MONITOR	40MN202RA
m. AN/GGC-59(V)3. Components same as (V)1 except:	4030-8GWH
(1) TRACTOR FEED PRTR (mono carrier,80 col)	40P151AA
(2) PRINTER CABINET	40CAB352RC
n. AN/GGC-59(V)5:	4030-8EWC
(1) OPCON CABINET	40CAB252RA
(2) OPCON	40K103RCB
(3) PEDESTAL	40CAB903RH
(4) PEDESTAL (PRINTER)	40CAB902AA
(5) CONTROLLER	40C430ABD025
(6) PRINTER CABINET	40CAB202RC
(7) FRICTION FEED PRTR (up/low carrier,80 col)	40P101AB
(8) MONITOR	40MN202RA
o. AN/GGC-62(V)5:*	4031-8RYS
(1) PEDESTAL (PRINTER)	40CAB902AA
(2) PEDESTAL	40CAB903RK
(3) CONTROLLER	40C435AEE091
(4) PRINTER CABINET	40CAB352RC
(5) OPCON	40K108KDE
(6) MONITOR	40MN202RA
(7) OPCON CABINET	40CAB252RA
(8) TRACTOR FEED PRTR (up/low carrier,80 col)	40P154AB
(9) CASSETTES (TEMPEST)	4016RA001RA
p. AN/GGC-62(V)6:* Components same as (V)5.	4032-8RYS
q. AN/GGC-62(V)7.* Components same as (V)5 except:	4033-8RYS
PEDESTAL	40CAB903RH

***Tape cassettes not included with this model have to be ordered separately.**

1-9. Common Names.

	Common Name
a. Teleprinter Set AN/GGR-3A(V)	Receive Only Print (ROP)
b. Telewriter-Teleprinter Set AN/GGC-57A(V)	Keyboard Printer (KP)
c. Teletypewriter-Display Set AN/GGC-55(V)	Keyboard Display (KD)
d. Teletypewriter-Display-Teleprinter Set AN/GGC-59(V)	Keyboard Display Printer (KDP)
e. Teletypewriter-Display-Teleprinter Cassette Set AN/GGC-62(V)	Keyboard Display Printer Magnetic Tape (KDPM)

1-10. Interconnection Cables.

	Used On
a. 405710 Logic AC	ROP,KP,KD,KDP,KDPM
b. 405711 Printer AC (supplied with KDPM Printer Cabinet)	ROP,KP,KDP,KDPM
c. 405780 Interface	ROP,KP,KD,KDP,KDPM
d. 405781 Opcon	ROP,KP
e. 405785 Printer (supplied with KDPM Printer Cabinet)	ROP,KP,KDP,KDPM
f. 405782 Opcon	KD,KDP,KDPM
g. 405712 Monitor AC	KDP,KDPM,KD
h. 402236 Monitor	KDP,KDPM
i. 408600 Cassette AC (supplied with Cassette Drive Units)	KDPM
j. 405785 Cassette (supplied with Cassette Drive Units)	KDPM

1-11. Tabulated Data.

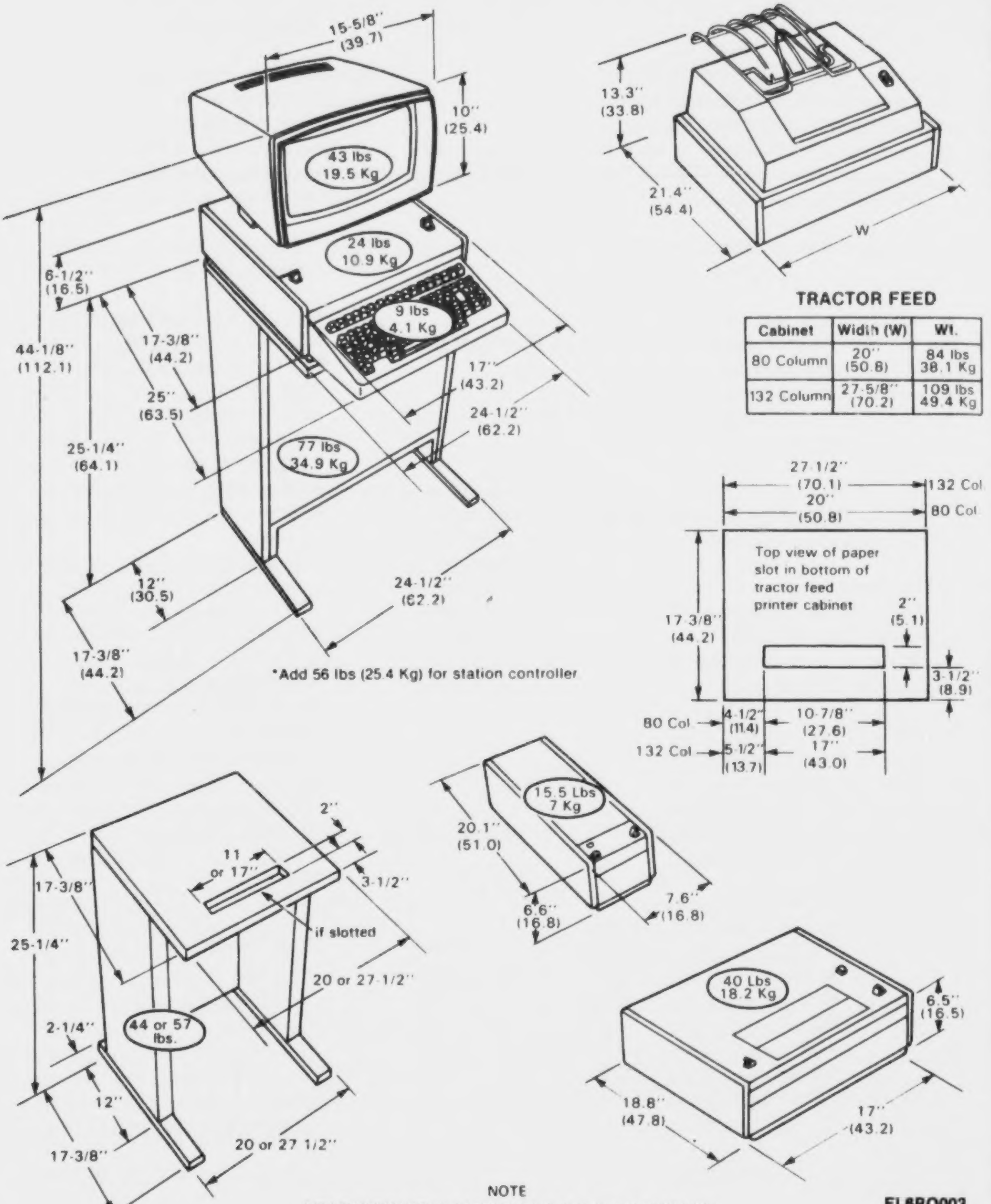
a. Data common to all configurations is listed below:

Power requirements	115 VAC ± 10%,50/60 Hz ± 5%
Operating Temperature	+ 40 F to + 110 F
Storage Temperature	-40 F to + 150 F
Humidity	2% to 95% (noncondensing)
Weight (approximate)	Unpacked
Display monitor w/housing	42 lbs.
Terminal logic	50 lbs.
Printer and printer logic	40 lbs.
Terminal logic/printer housing	15 lbs.
OPCON w/cover	5 lbs.
Pedestal	56 lbs.
Cassette drive KDPM only	19 lbs.

b. Operating power and heat generation:

UNIT	AMPS	WATTS	BTU/HR
ROP	3.15	260	885
KP	3.65	330	1130
KD	3.35	365	1250
KDP	4.50	500	1720
KDPM	5.85	615	2120

c. Physical Characteristics (Fig 1-3, Pg 1-6)



TRACTOR FEED

Cabinet	Width (W)	Wt.
80 Column	20" (50.8)	84 lbs 38.1 Kg
132 Column	27-5/8" (70.2)	109 lbs 49.4 Kg

*Add 56 lbs (25.4 Kg) for station controller

NOTE
MEASUREMENTS IN PARENTHESIS ARE IN CENTIMETERS
UNLESS STATED IN OTHER METRIC UNITS

EL6RQ003

Figure 1-3. Physical Characteristics

CHAPTER 2

SERVICE UPON RECEIPT AND INSTALLATION

SECTION I. SERVICE UPON RECEIPT OF MATERIAL

2-1. Unpacking.

a. Packaging Data. When packed for shipment, units comprising each configuration are packed in one corrugated carton and then packed in another corrugated carton. Refer to AR 746-1 for packing/unpacking instructions.

b. Removing Contents. Remove contents from the corrugated cartons as shown in AR 746-1.

CAUTION

Be careful when unpacking and handling the printer. The printer can be damaged by improper handling (dropping or banging against other equipment).

NOTE

When opening cartons, be certain not to destroy them. Remove contents from cartons, replace all packing material, and retain cartons for future shipment.

2-2. Checking Unpacked Equipment.

a. Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 364 (para 1-3b).

b. Inspect the equipment for completeness as listed on the packing slip. If a packing slip is not available, check for the contents listed in paragraph 1-8 for configuration being used. Report all discrepancies in accordance with AR 55-38. Shortage of a minor assembly, or a part that does not affect proper functioning of the equipment, will not prevent use of the equipment. Major deficiencies may require the equipment to be returned through supply channels for replacement.

c. If the equipment has been used or reconditioned, see whether it has been changed by a Modification Work Order (MWO). If the equipment has been modified, the MWO number will appear near the nomenclature plate. Check to see whether the MWO number (if any) and appropriate notations concerning the modifications have been entered in the equipment records.

2-3. Siting. The following requirements should be considered when selecting a site for the terminal:

a. Access for operating and maintenance personnel should be convenient. All connections are made at the rear of the equipment. Allow at least 18 inches at the rear of the equipment for connecting and disconnecting cables.

b. Adequate lighting for both day and night operation should be provided for operating personnel. The operating range of the terminal is dependent upon the range of the equipment into which it is connected.

SECTION II. INSTALLATION INSTRUCTIONS

2-4. Tools and Test Equipment. The tools and test equipment required for the installation of the terminals listed in paragraph 1-1 are as follows:

ITEM	MODEL NO.	QUANTITY
Tool Kit, Electronic Equipment	TK-101/G	1 each

2-5. Assembly. The assembly and wiring of different terminal configurations is shown in Fig 2-1 and Fig 2-2.

NOTE

For cable identification see paragraph 1-10.

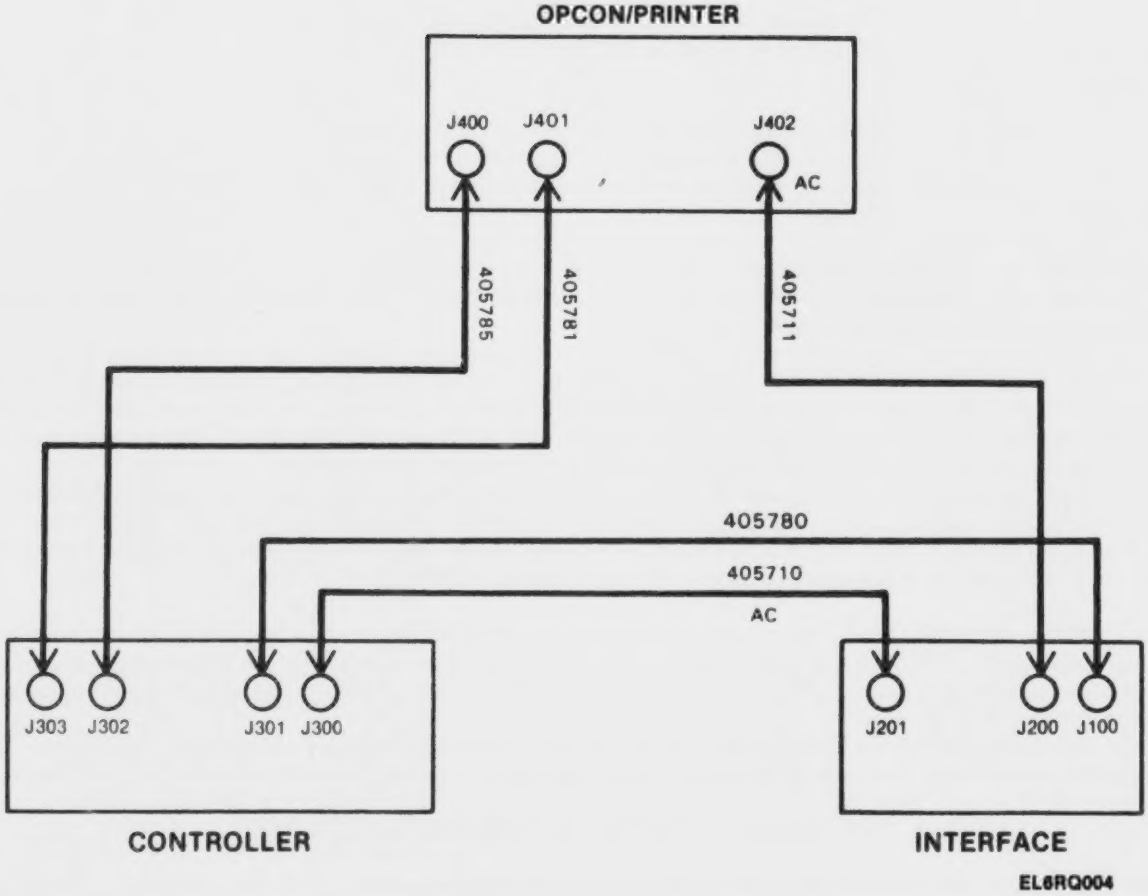


Figure 2-1. Cabling for ROP Configuration

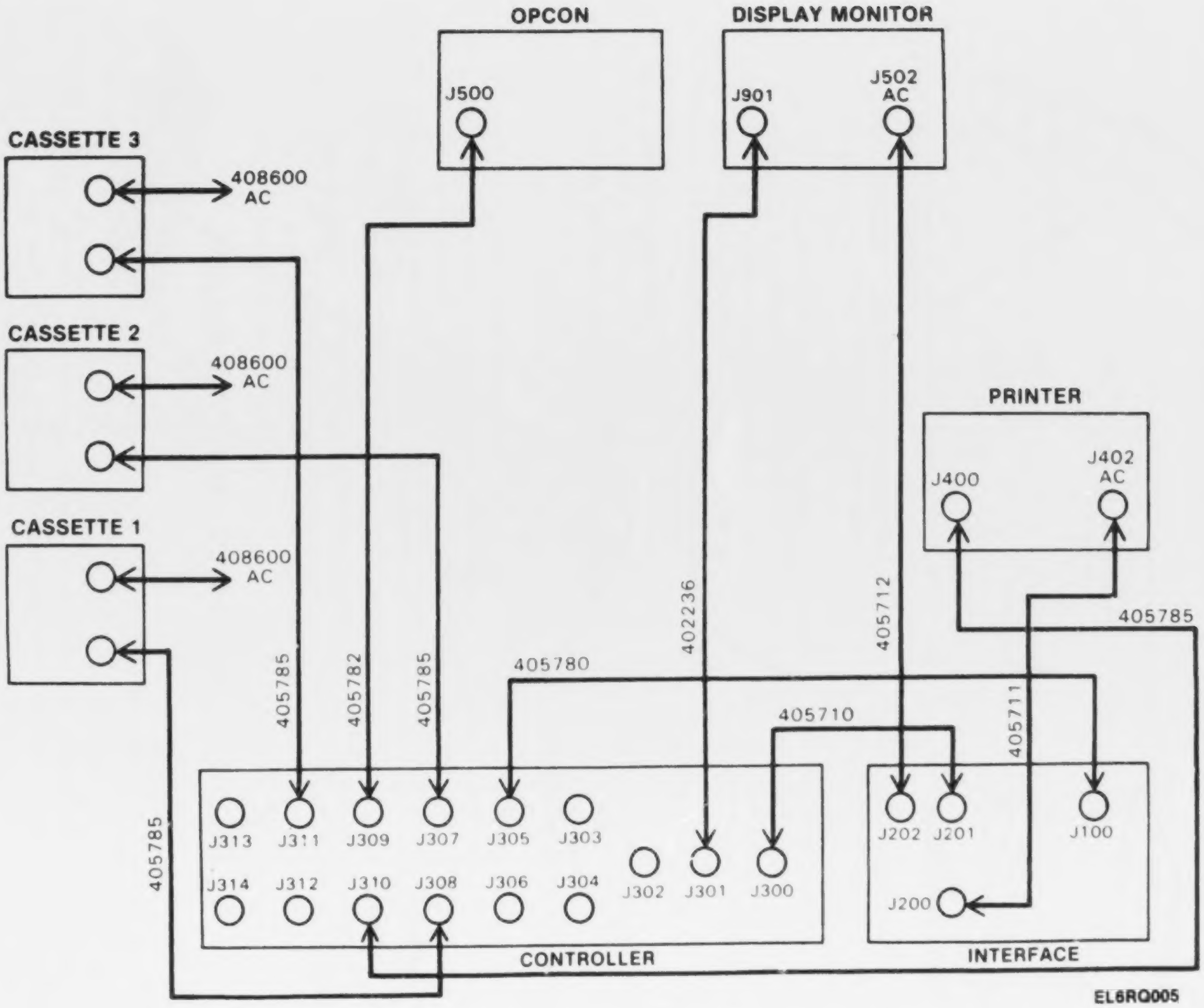


Figure 2-2. Cabling for KD, KP, KDP, KDPM Configurations

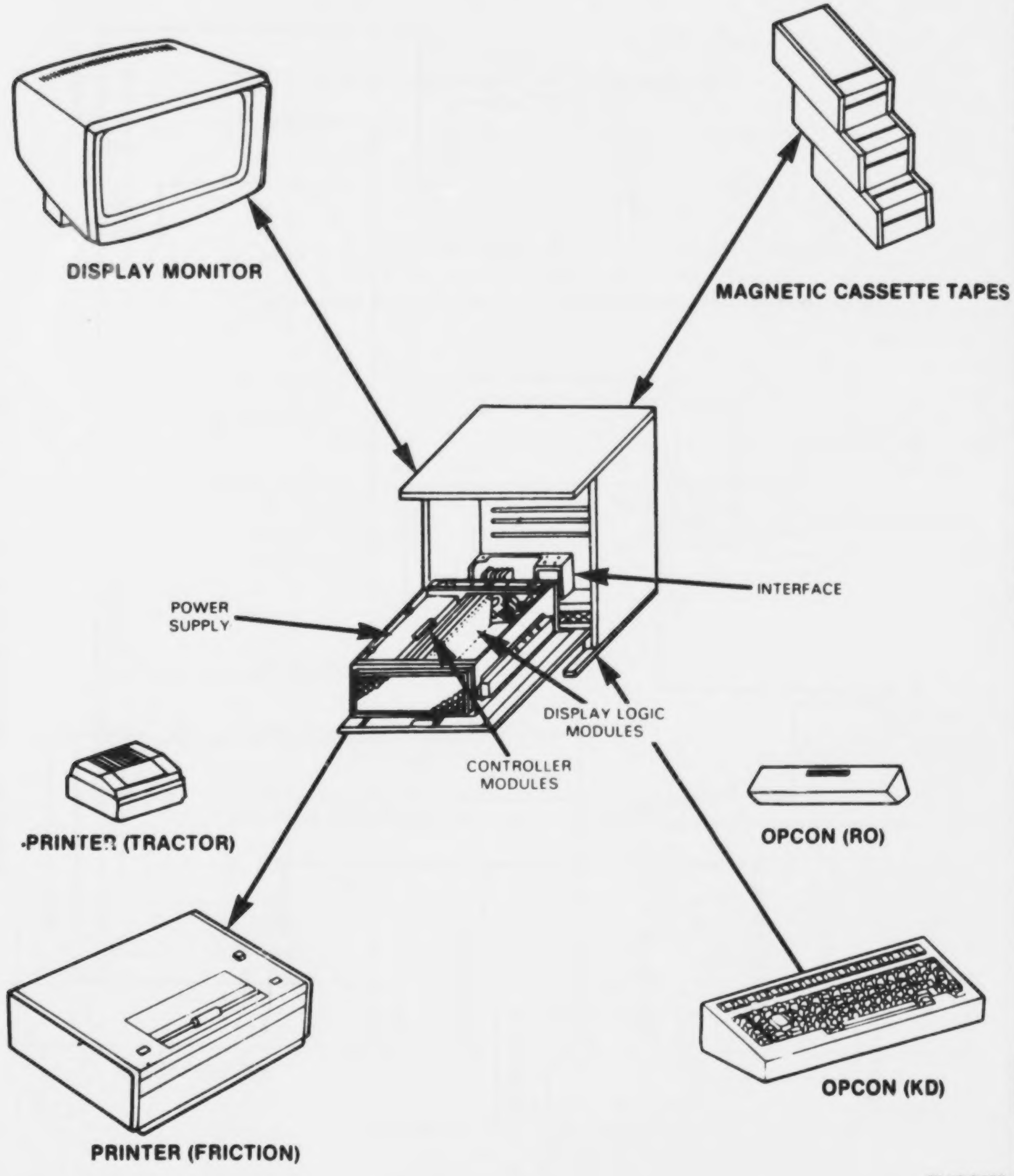


Figure 3-1. Typical Tempest Model 40/8B Data Terminal Components

CHAPTER 3

GENERAL THEORY OF OPERATION

SECTION I. INTRODUCTION

3-1. General Description.

a. Scope. The Tempest Model 40/8B Data Terminal is a combination of modular components interconnected to provide data communications with a central message processor on private line applications (fig. 3-1, pg. 3-0).The line code used is 8-level, even, odd, or no parity ASCII (American National Standard Code for Information Interchange), or 5-level Baudot. Internally the system consists of two I/O buses; line bus and local bus. I/O devices are assigned to one of these buses by control key depression or by default.

b. Typical Operation. Data is entered on the screen prior to transmission. Text can be seen and edited for accuracy and proper formatting, then sent on-line at maximum terminal speed. If the data exceeds the display's memory, it can be transferred to the receive tape cassette drive for later transmission via the send tape cassette drive. While data is being prepared locally, the printer can respond to its select code and print the data without operator intervention. The receive tape cassette drive can respond to its own select code and receive the incoming data - or both can receive it. The send tape automatically transmits when the poll code is received. Depressing the control mode key causes a number of operational choices to be displayed on the screen.

3-2. Basic Set Configurations:

a. AN/GCC-55(V) Keyboard Display (KD). This contains a display monitor, controller, and OPCON. It provides a means for data entry, storage, display, editing, sending, and receiving.

b. AN/GCC-59(V) Keyboard Display Printer (KDP). This contains a display monitor, controller, OPCON, and a printer. It provides a means for data entry, storage, display, editing, printing, sending, and receiving.

c. AN/GCC-57A(V) Keyboard Printer (KP). This contains a controller, OPCON, and a printer. It provides a means for data entry, on line, directly from the keyboard, and prints all send and receive data.

d. AN/GGR-3A(V) Receive - Only Printer (ROP). This contains a controller, OPCON, and printer. It provides a hard copy of receive data. It is used with an 80 column friction or tractor feed printer or a 132 column tractor feed printer.

e. AN/GGC-62(V) Keyboard Display Printer Magnetic Tape (KDPM). This contains a display monitor, controller, OPCON, printer, and up to 3 magnetic cassette tape drives. It provides a means for data entry, storage, display, editing, printing, sending, receiving, and monitoring. It is used with an 80 column friction feed printer or a 132 column tractor feed printer. The cassette drive units provide storage and retrieval of data on magnetic cassette tapes.

SECTION II. GENERAL COMPONENT OPERATION

3-3. Controller (fig. 3-2, pg. 3-3).

a. Scope. The controller provides interfacing and control necessary for data routing between the OPCON, display monitor, printer, cassette tape drive, and the input/output port. Signals to and from various devices are transformer coupled on circuit cards in the controller container. Data and control lead signals to the external interfaced unit are optically coupled on circuit cards in the controller container.

b. Signals. The Teletype Standard Serial Interface (SSI) Form is used between the printer, controller, cassette tape drives, and the full OPCON. DC levels are used between the controller and the Receive Only (RO) OPCON. The associated interface unit converts these signals into Mil-Standard 188C signals for use on line.

c. Power Supply. The 40PSU102 and 40PSU103 generate three regulated output voltages (+5VDC, +12VDC and -12VDC) and a logic level Power or Reset (POR) signal.The 40PSU103 has an added power line filter but no operational differences from the 40PSU102.

d. Interfaces.

(1) An isolated interface, conforming to MIL-STD 188C (+6V polar signaling), is provided with each set. It provides a means for customer termination of signal, clock, and control leads.

(2) An interface conforming to EIA STD RS-232 is available.

(3) A current interface allows communication on a 20/60 Ma DC neutral current loop.

(4) The Tempest Model 40/8B Data Terminal is basically full duplex. The transmit and receive lines are isolated and independent of each other.

e. Operating Modes. The operation of the Tempest Model 40/8B DataTerminal will be in one of the following modes:

(1) Control Mode. This is an off-line mode which gives the operator access to numerous operations of the OPCON, monitor, controller, cassette drives, and printer.

(a) Depressing the CNTRL mode key enters the control mode.

(b) Commands are executed by entering the appropriate symbol in front of the commands and depressing the LINE FEED key on the OPCON.

(2) Local Mode (fig. 3-3, pg. 3-4). The controller interfaces the OPCON to the display logic. The Model 40/8B is controlled by the OPCON. It allows the operator to edit data to be stored on the display logic, receive tape, or data displayed on the monitor prior to transmission to the line, or a local printer. The control mode and various other controls are used to manipulate messages among the various terminal devices.

(a) Display to Receive Tape (fig. 3-4, pg. 3-5).

1. This local function permits data displayed on the monitor to be recorded on the receive tape. The controller interfaces the monitor thru the display logic to the receive tape.

2. Depressing the REC TAPE LCL key puts the receive tape on the local 1/O bus.

3. Depressing the DISP SEND key transmits the data from display to the receive tape.

(b) Send Tape to Display (fig. 3-5, pg. 3-6).

1. This local function permits data stored on the send tape to be displayed on the monitor. The message can be updated and recorded on the receive tape. Physically switch the receive tape to send tape drive or reassign the receive tape to become the send tape.

2. Enter the control mode to position tape to desire data block.

3. Exit the control mode and depress the DISP LCL key and SEND TAPE LCL key to transmit message from send tape to display.

(c) Send Tape to Printer (fig. 3-5, pg. 3-6).

1. This function is used to prepare a hard copy of messages stored on the send tape.

2. Position cassette to desired block through the use of the control mode (paragraph 4-2).

3. Depress the PTR LCL key to turn the printer on and depress the SEND TAPE LCL key to transmit message from send tape to printer.

(d) Send Tape to Receive Tape (fig. 3-5, pg. 3-6).

1. This mode is used if the update of messages consist of including additional data.

2. Enter control mode to access messages to be updated.

3. Depressing the DISP LCL key and SEND TAPE LCL key transfers the send tape to the display.

4. After making changes, the message is transferred to the receive tape by depressing REC TAPE LCL, DISP SEND, and DISP LCL keys.

5. The receive tape can be switched to the send tape position by physically switching the tape or through the control mode.

(3) On-Line Terminal Operation. The 40/8B terminal is automatically placed on-line when power is applied. (POLL/SEL indicator lighted.) Control over sending and receiving functions is done through the Center Message Processor (CMP). All sending and receiving of messages to and from the line is controlled by character sequence from the line. With the POLL/SEL key off, the terminal data transfer will be manually controlled by the operator.

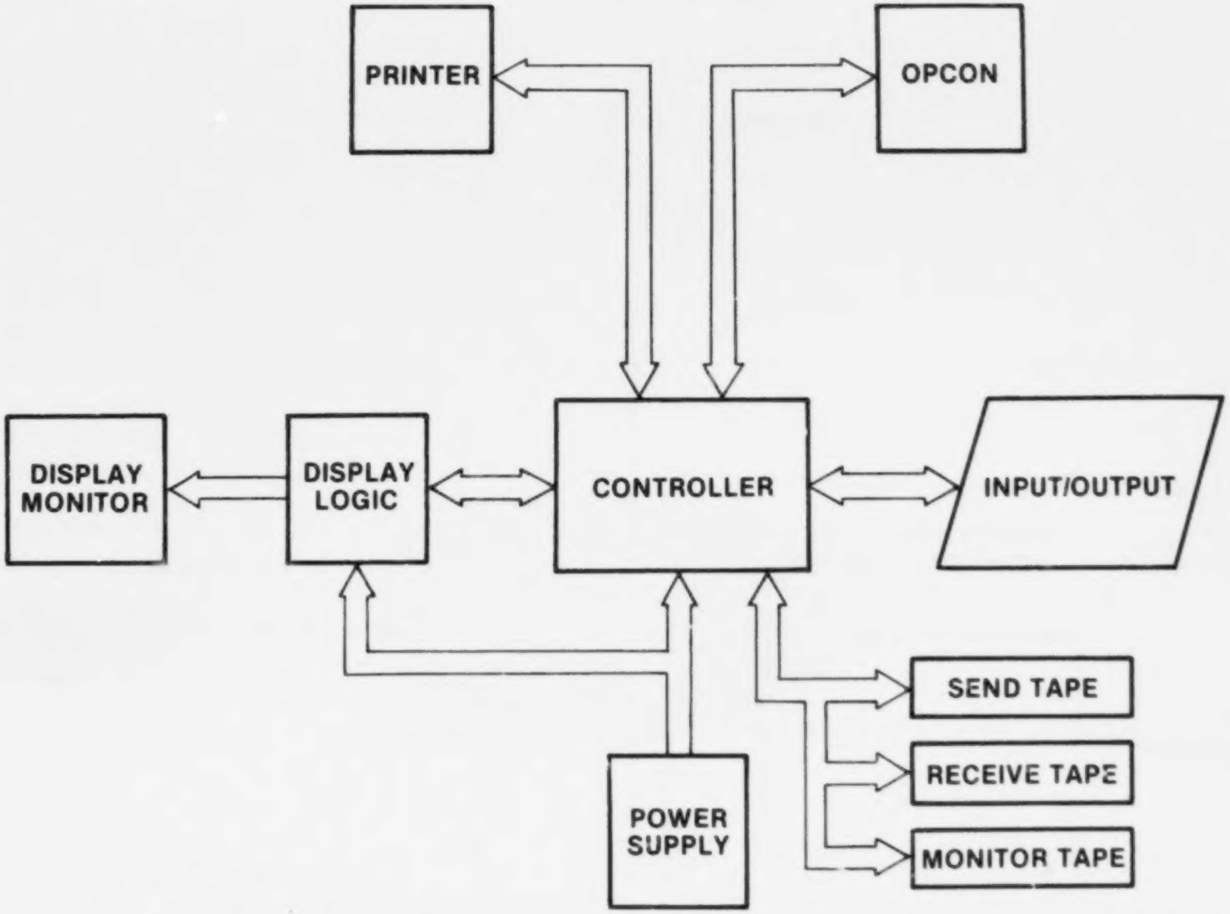


Figure 3-2. Data Flow in a Typical Tempest Model 40/8B Data Terminal

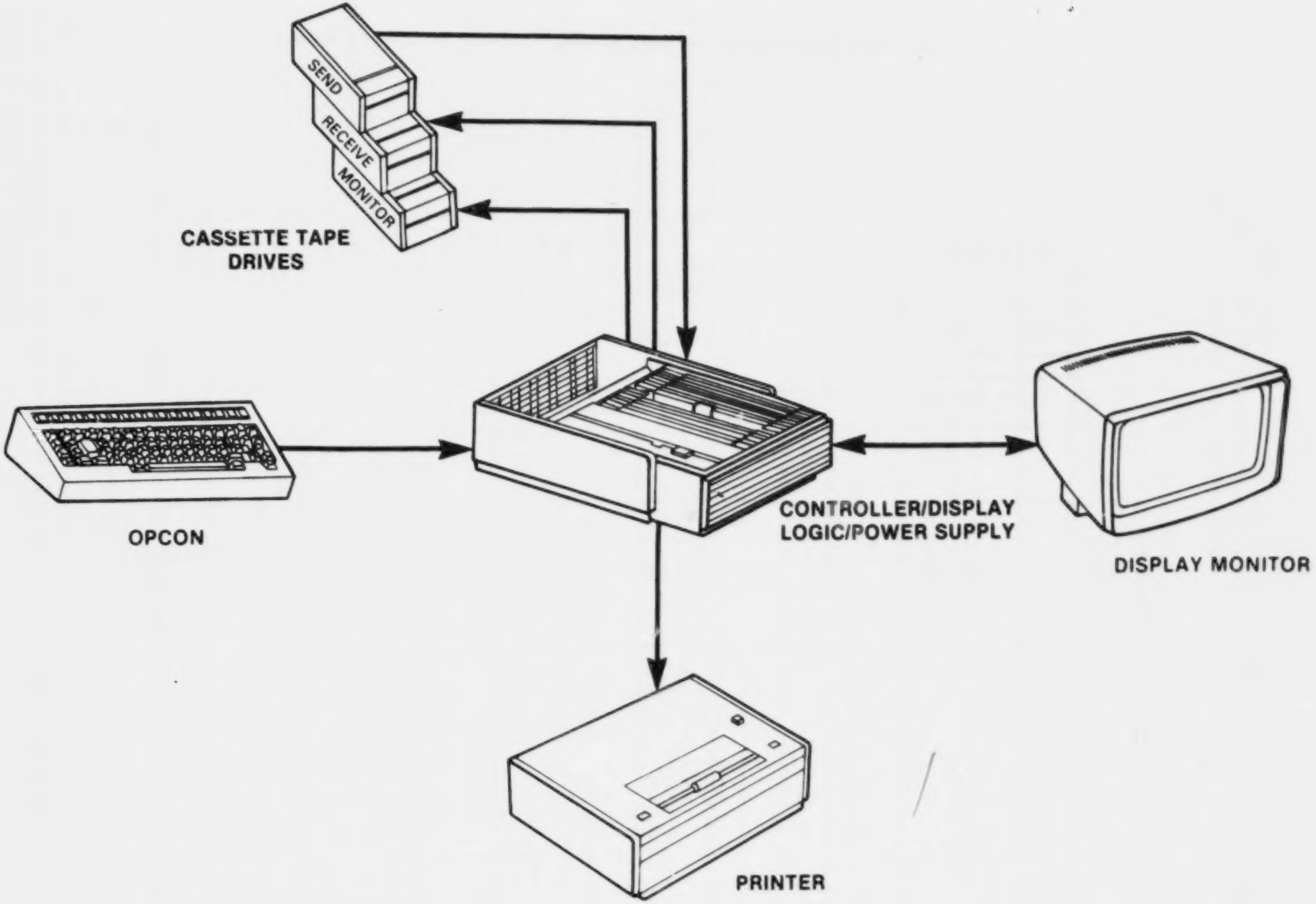


Figure 3-3. Local Mode

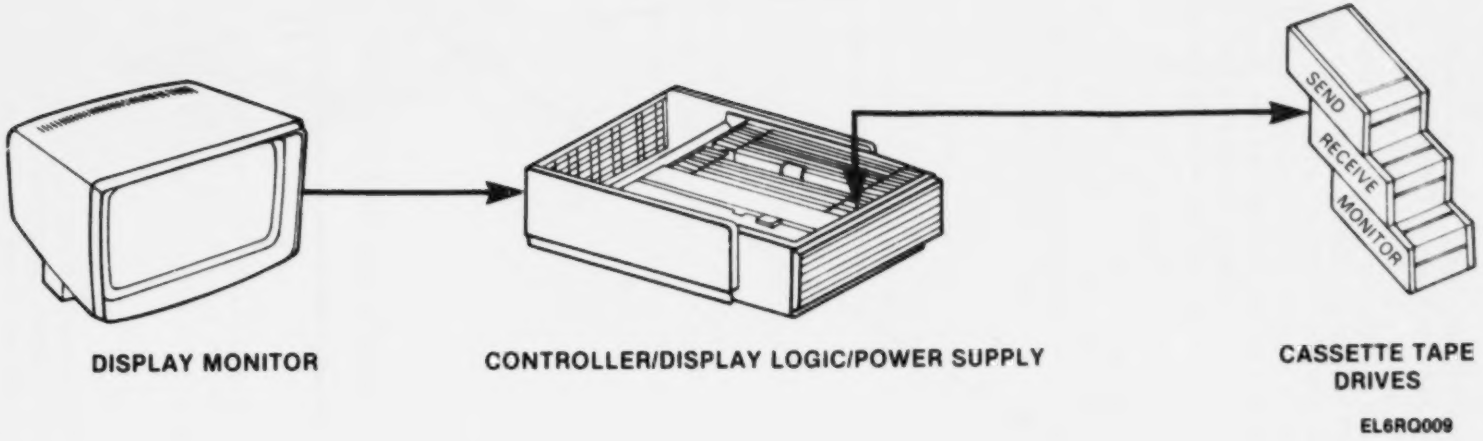


Figure 3-4. Display to Receive Tape

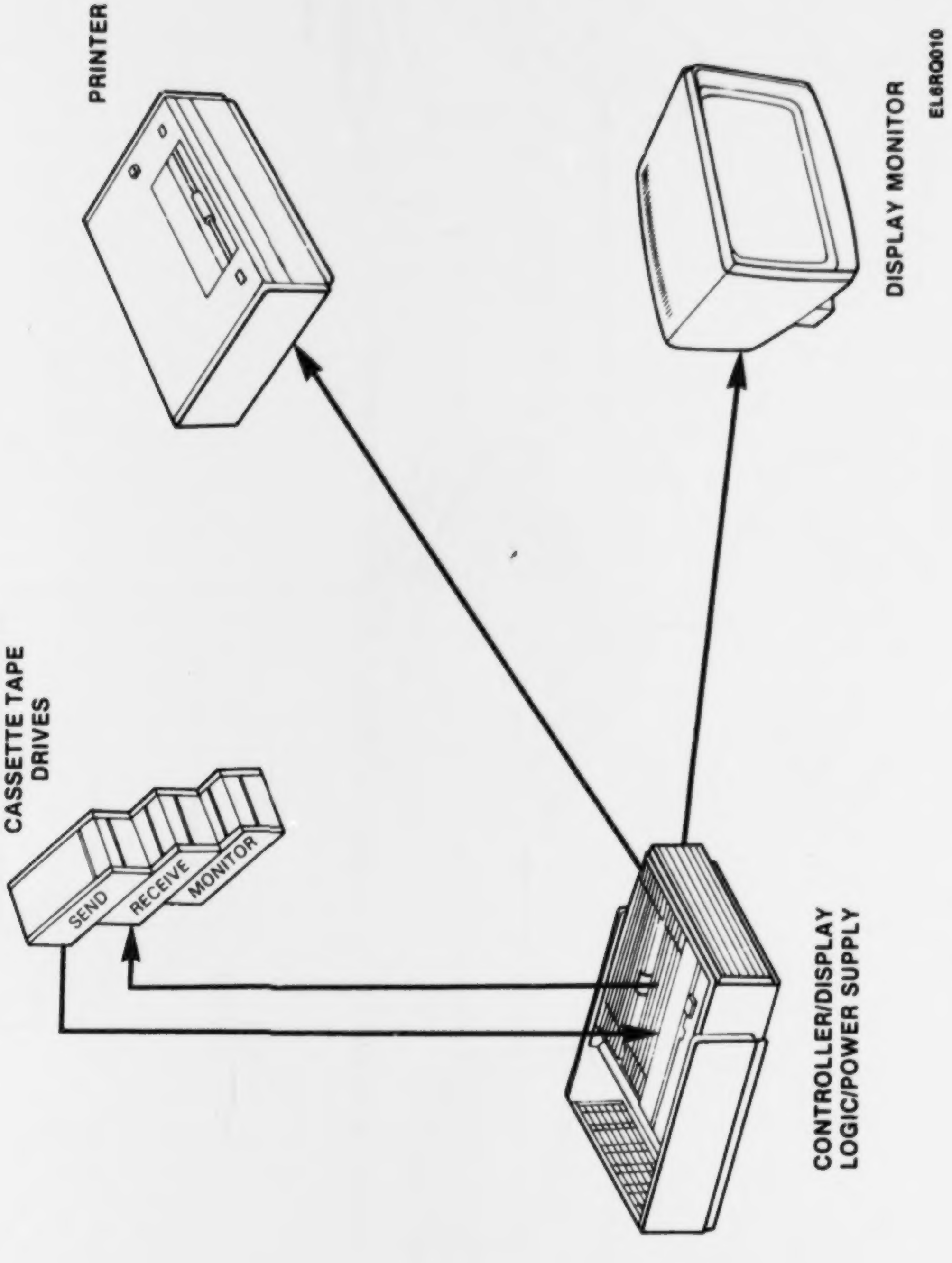


Figure 3-5. Send Tape to Display Monitor, Receive Tape and Printer

(a) The 40/8B terminal is normally operated full-duplex (transmit and receive lines are isolated and independent of each other) (fig. 3-6, pg. 3-8). The set is shipped with a half-duplex (fig. 3-7, pg. 3-9) strap installed and must be removed at installation (See fig. 3-8, pg. 3-10) for full duplex operation.

(b) There are various operational states when operating as an on-line terminal:

1. On-line selective calling operation. Data is transferred through selections and polls of the terminal devices. Messages may be sent either singly or multiply depending on the control option selected. Specific devices may be used to monitor either all sent or loop-backed receive data.

2. On-line manual operation. All data transfer will be manually controlled. No automatic line control procedures will be utilized. The first device ready to send will send and any device switched to receive will receive. Received ETXs are discarded (as for POLL/SEL) but EOTs are kept unchanged.

NOTE

During local or on-line operation, the sending devices may transmit data either one message at a time or all available data may be transmitted at once. These modes are selected when the display is in the control mode.

(c) The Model 40/8B terminal can communicate on a batch or conversational basis. In the batch mode, the operator enters and edits the data on the display before transmission. The data is then transmitted from either the display or magnetic tape cassette. In the conversational mode, the operator sends the data, a character at a time, from the OPCON.

3-4. Display Logic (fig. 3-1, pg. 3-0).

a. This assembly, an integral part of the controller, consists of the editing control electronics and the display storage memory.

(1) The editing control electronics interprets and displays on the monitor, editing functions received from the operator console. The editing control logic can perform these functions:

- *(a)* Cursor movements - up, down, left, right, return, tab, home
- *(b)* Line insert and delete
- *(c)* Character insert and delete
- *(d)* Column and single tab sets and clears

(2) Editing options:

- *(a)* Segment advance
- *(b)* Scroll up, scroll down
- *(c)* Highlight
- *(d)* Protected format
- *(e)* Underline

(3) The editing and control logic is capable of displaying all 128 ASCII characters with the exception of backspace.

(4) The basic display storage memory contains storage for 1920 characters (Twenty-four, 80 character lines).

(5) Storage options:

- *(a)* 3840 characters (forty-eight, 80 character lines, two segments)
- *(b)* 5760 characters (seventy-two, 80 character lines, two or three segments)

(c) The display storage memory consists of one, two, or three memory cards dependent on the number of lines and terminal features required.

NOTE

When the display logic contains two segments of memory, repetitive scrolling will cause a momentary display of a portion of the text as the scroll function is performed by the logic.

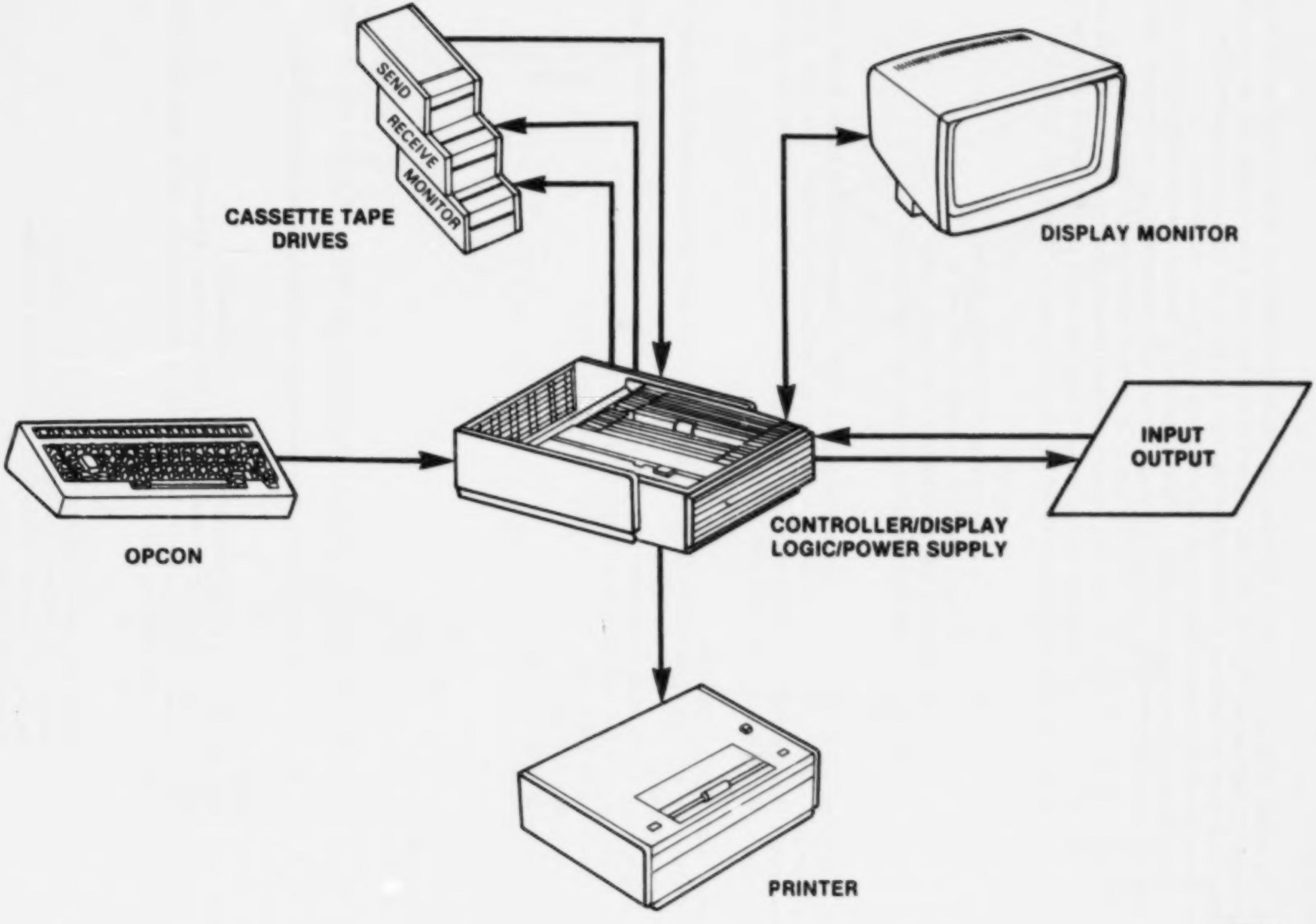


Figure 3-6. Full-Duplex Mode

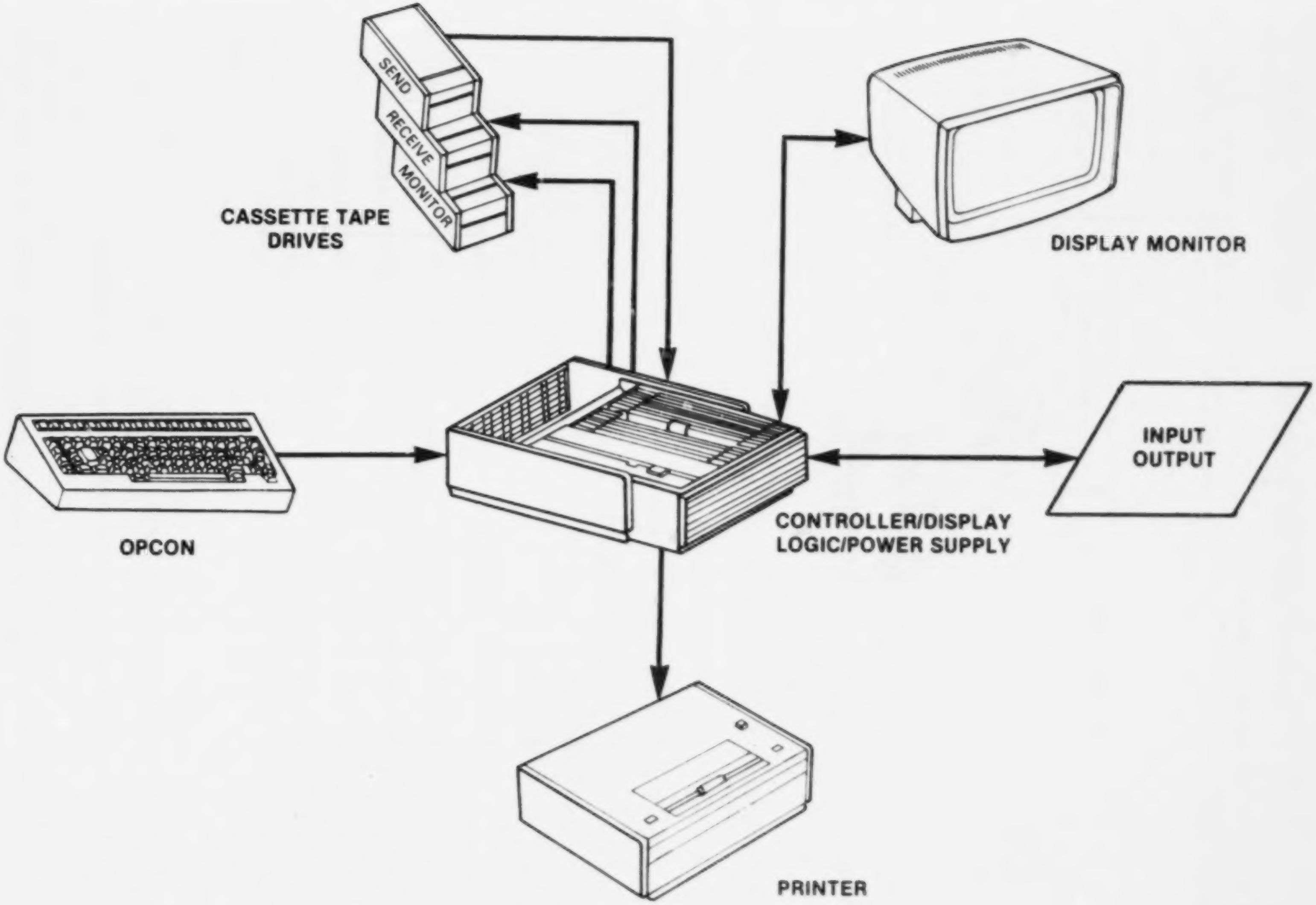
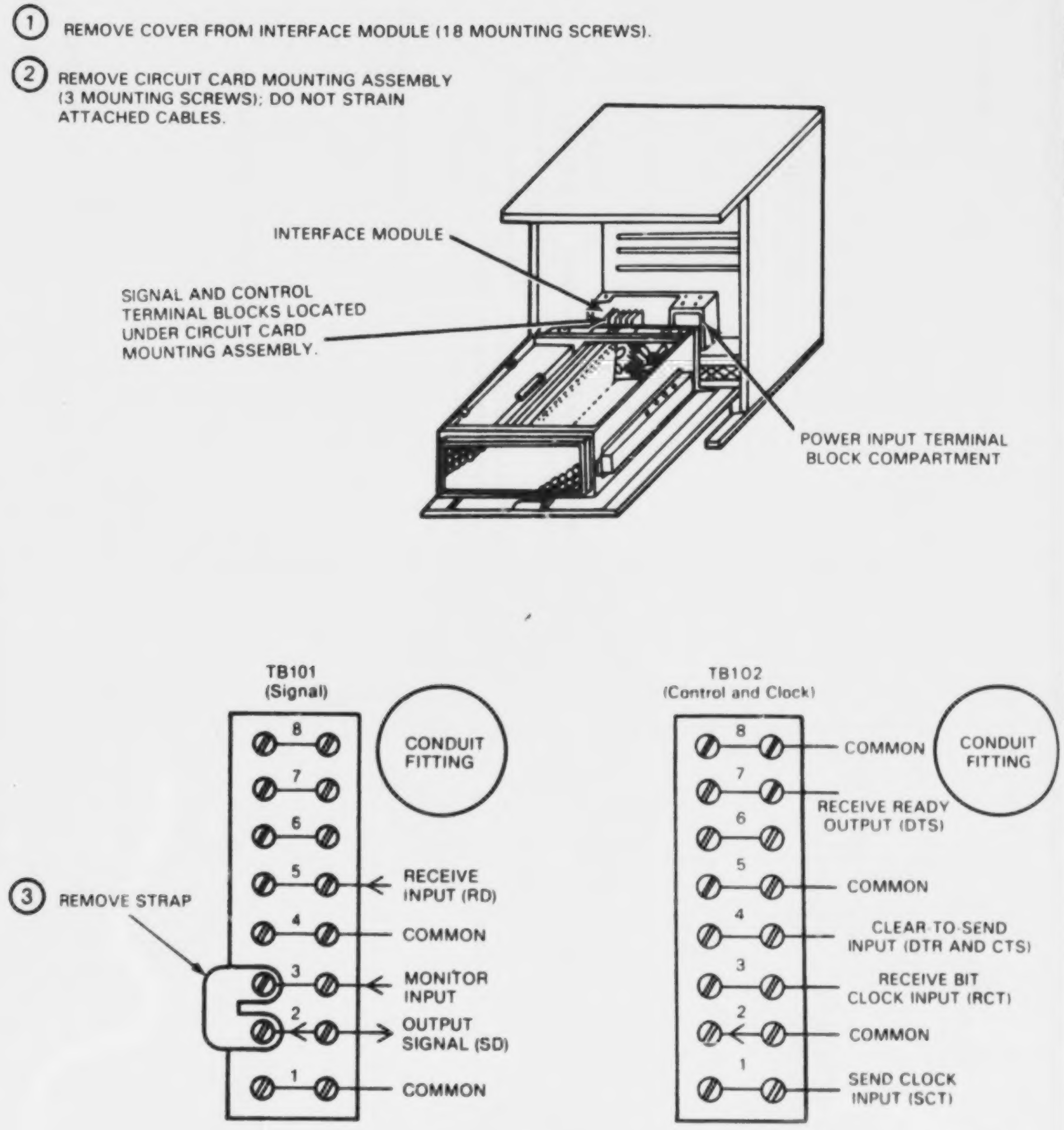


Figure 3-7. Half-Duplex Mode



① REMOVE COVER FROM INTERFACE MODULE (18 MOUNTING SCREWS).

② REMOVE CIRCUIT CARD MOUNTING ASSEMBLY (3 MOUNTING SCREWS); DO NOT STRAIN ATTACHED CABLES.

③ REMOVE STRAP

INTERFACE MODULE
SIGNAL AND CONTROL TERMINAL BLOCKS LOCATED UNDER CIRCUIT CARD MOUNTING ASSEMBLY.
POWER INPUT TERMINAL BLOCK COMPARTMENT
TB101 (Signal)
CONDUIT FITTING
8
7
6
5
RECEIVE INPUT (RD)
4
COMMON
3
MONITOR INPUT
2
OUTPUT SIGNAL (SD)
1
COMMON
TB102 (Control and Clock)
8
COMMON
CONDUIT FITTING
7
RECEIVE READY OUTPUT (DTS)
6
5
COMMON
4
CLEAR-TO-SEND INPUT (DTR AND CTS)
3
RECEIVE BIT CLOCK INPUT (RCT)
2
COMMON
1
SEND CLOCK INPUT (SCT)

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NOTE

THE 40/8B TERMINAL IS NORMALLY OPERATED IN THE FULL DUPLEX MODE. INSTALL STRAP (3) FOR HALF DUPLEX OPERATION.

Figure 3-8. Interface Connections

b. The Display Logic module interfaces the monitor with the controller. The three interconnecting cables connect the power supply, monitor and the associated controller.

3-5. Display Monitor (fig. 3-1, pg. 3-0).

a. The display monitor provides a visual display on a cathode ray tube of data stored by the display logic.

b. It contains:

(1) Vertical and horizontal sweep generators.
(2) Dot and highlight amplifiers.
(3) High and low voltage power supplies.

c. Characters are displayed in dot pattern form within a matrix of 7 horizontal dots by 9 vertical dots. Adjustments are provided within the monitor for:

(1) Horizontal size and linearity.
(2) Brightness.
(3) Focus and centering.

d. Indicator lamps are provided within the monitor for use in checking the operation of major subsystems.

e. It is capable of displaying characters, singly or in groups at half intensity, while under control of the display logic.

f. Logic signals are routed to the monitor via a cable to the rear of the housing assembly.

g. AC power is routed to the monitor via a connector in the left support leg.

3-6. Operator Console (OPCON) (fig. 3-1, pg. 3-0).

a. There are two types of OPCONs in the Tempest Model 40/8B system, the Keyboard Display OPCON (KD) and the Receive Only OPCON (RO).

(1) The KD OPCON is a keytop actuated device for manually generating data and operational mode information in the form of coded signals.

(a) It functions to receive and indicate (lighted keytops) status codes or sound (internal tone generator) alarm codes.

(b) It is interfaced with other model 40 components via separate controller logic.

(c) It consists of two circuit cards mounting the:

1. Integrated and discrete component logic.
2. Keytop associated keyswitches.
3. Tone generator.
4. Cabling, hardware, and covers/9-pin connector.

(2) The Console Logic Circuit Card:

(a) Senses up to 90 depressed keys.

(b) Generates and transmits codes for depressed keys.

(c) Generates alternate codes when the SHIFT, CONTROL, or CAPITAL LOCK keys are depressed.

(d) Generates repeat characters.

(e) Receives and decodes specific lamp data codes to turn on, off, or flash up to 16 light emitting diodes (LED) indicators.

(f) Receives and decodes specific control codes to execute and initialize the MOS integrated circuits to:

1. Generate a status indicator code.
2. Control a remote test mode.
3. Generate an alarm drive signal.

(g) Provides contact switches to activate a power-on test and control a local loopback self-test mode.

(h) Filters and provides signal isolation between the OPCON and controller.

(3) The RO OPCON is keytop actuated device for manually selecting certain operating modes of receive only printer sets. Selection is by direct keyswitch make-break operation. Status of the various modes is indicated by lighted keytops which consists of a frame mounting the:

(a) Keytop associated keyswitches
(b) Necessary hardware and covers
(c) Cabling terminated by a 9-pin connector

3-7. Tempest Model 40 Printers (fig. 3-1, pg. 3-0).

a. The 80 column friction, 80 column tractor, and the 132 column tractor feed impact printers are electromechanical devices used to print data a line at a time.

b. Information is sent to and from the printer in the form of teletype Standard Serial Interface (SSI) or the EIA STD RS-232.

(1) Standard Serial Interface (SSI): Accomplished via a four wire (two twisted pairs) interface. All data and message control information is sent to the printer in the form of an 18 bit word. ASCII data, control bits, and control words that are sent to the printer must be in serial form.

(2) RS-232 Interface: Used with a signal source which requires an EIA-type bipolar voltage signal. Used where the SSI interface is not practical. Accepts ASCII coded data (10 unit code) in serial form and provides parallel control and status signals.

c. The 80 column friction/tractor feed printer operates at speeds up to 5.2 lines per second. The friction feed printer uses single-copy friction feed paper, 8-1/2 inches wide, 5 inches in diameter. The tractor feed printer uses paper from 3-5/8 inches to 9 inches between sprocket holes. One to six-ply sprocket feed paper can be used.

NOTE

While the friction feed printer is capable of multiple-copy printing, it is not recommended due to paper handling problems that usually result in friction feed applications.

(1) Printing is accomplished by print hammers impacting the paper and ribbon into type pallets in a carrier moving across the page at a constant speed. One print hammer mechanism is provided for each of the 80 columns.

(2) A self-contained regulated power supply supplies -24 VDC logic output and -24 VDC magnet output.

(3) The printer logic card provides interface between the controller and the printer mechanics. It provides selectable options for the user, such as:

(a) Programmable left and right margin control
(b) Selection of even, odd, or no parity and extended ASCII operation
(c) Escape character sequence recognition
(d) Lower case foldover
(e) Paper out and/or paper jam gated with end of form
(f) Form feed on ETX
(g) Paper feed out on loss of receive message or request device on command off
(h) Idle line time out
(i) Shift in/shift out
(j) Type carrier character set programming
(k) SSI interface select
(l) OEM baud rate select
(m) Auxiliary alarm

d. The 132 column tractor feed printer is similar to the 80 column tractor feed printer (para. 3-7, a thru c) except for the ability to print 132 columns with a maximum paper width of 15 inches. The printer uses paper from 3-5/8 inches to 14-1/2 inches between sprocket holes. Printed characters are spaced horizontally at ten per inch and lines of printing are spaced at six per inch.

3-8. Cassette Drive (4OCD) (fig. 3-1, pg. 3-0).

a. The cassette drive provides the mechanics and electronic circuitry necessary to store and retrieve data. A magnetic tape cassette is used to store data. It functions only in response to commands from the terminal logic in the external controller.

NOTE

A teletype mode 40C400 family of controllers must be used. Other controllers conforming to the 40CD interfacing requirements may be used.

b. The teletype Standard Serial Interface (SSI) system is used for data exchange between the controller and the cassette drive units.

c. The cassette drive operates as a data block device. Operation is synchronous within a block and is asynchronous by block.

(1) Transmission to or from the drive may be selected but once transmission begins, an entire block of data must be transmitted.

(2) Transmission on a character by character basis is not possible.

d. The power supply within the drive unit supplies + 12 VDC and -12 VDC for operations.

e. Bit density will range from approximately 750 to 1200 bits/inch/track on a 220 foot recorded tape.

f. It may be assigned as a send tape, receive tape, or monitor tape by means of installer option switches or in the control mode. Only one of each tape is allowed in a system.

NOTE

Never remove the cassette tape or turn AC power off to cassette drive before rewinding the cassette tape.

g. Two types of data block formats are possible:

(1) Contents modification will not destroy data in following blocks

(2) Content modification will destroy data in following blocks

3-9. GENERAL DESCRIPTION OF DATA TRANSFER.

a. Data transfer between devices is controlled by the C400 controller through the keyboard control switches and/or information entered on the display.

b. The display, and its' associated logic,is the only device that can act as a sender or as a receiver. All other devices are dedicated to either the sending or receiving of messages.

c. Internally, the system consists of two I/O buses; line bus and local bus. I/O devices are assigned to one of these buses by control key depression.

d. Only one device can be assigned as a sender on any bus at any one time, but multiple receivers can be assigned.

e. Locally the send rate is controlled by the speed of the slowest receiver. A sender may only be assigned after a receiver.

f. Multiple I/O operations can run at the same time as long as there are no conflicts in either initiating the operations or in the transfer of data.

3-10. OPTIONS. The Tempest Model 40/8B provides a number of options available at the time of installation. The following options are implemented by positioning option switches on the 410411 circuit card in the controller of the station:

a. Printer to copy send or receive line (Option A) -- when this option is enabled, the printer copies data that is sent from the station or messages received for the printer. When disabled, the printer copies all received data.

b. Send ETX on premature end of message (Option B) -- enable this option and an ETX will be transmitted to the line if a message currently being transmitted is aborted. (Refer to sections on display and send tape operations for abort procedures.)

c. Colon is lower case on the keyboard and semicolon upper case (Option C) -- disable the option and the colon and semicolon positions are reversed.

d. Keyboard on-line transmits blind (Option D) -- this option is used to select whether or not the keyboard characters being sent to the line are also sent to the display.

e. Display received ESC sequences (Option E) -- enable this option and received ESC sequences will be displayed. Disable this option and the function will be performed.

f. Printer required to transmit (Option F) -- the printer must be on-line before a message can be transmitted on-line in POLL/SEL if the option is enabled.

g. Send on-line the extended keyboard characters (Option G) -- applies only to KBD On-Line mode and when enabled will allow the codes for all keyboard keys to be transmitted on-line except for those keys in the top control strip to the left of and including FORM SEND.

h. Monitor tape required to transmit on-line (Option H) -- if enabled, requires that a monitior tape must be ready before the display or send tape will be allowed to be out on-line.

i. Automatic paging on printer (Option I) -- enable this option to have a Form Feed (FF) character sent to the printer after every 54 lines of data, when the motor is started, or upon end of message.

j. Printer optioned for double line feed (Option J) -- option should reflect how the printer itself is optioned and is used in conjunction with the automatic paging option.

k. Keep received letters and figures characters (5-level only) (Option K) -- when disabled, the controller will discard Shift-In (SI) and Shift-Out (SO) characters received from line.

l. Printer select also selects receive tape (Option L) -- enable this option to automatically select the receive tape and the printer whenever a printer select is received from the line (POLL/SEL mode only).

m. Terminal parity (Option M) -- for all 8-level operations, these option switches set the selection of line parity as being odd, even, or no parity.

n. Display stays in receive at end of message (Option N) -- enable this option to keep the display in Receive mode ready to receive additional messages from the line. Disable this option and the display will turn off at the end of message character.

o. Send tape location (Option P) -- allows the selection of which tape drive is to be used on power up as the send tape.

p. Receive tape location (Option Q) -- allows the selection of which tape drive is to be used on power up as the receive tape.

q. Monitor tape location (Option R) -- allows the selection of which tape drive is to be used on power up as the monitor tape.

r. Station ID (Option S) -- allows the programming of the two station identification characters.

s. Station ID (Option T) -- allows the programming of the two station identification characters.

t. Display to go to receive after sending (Option U) -- enable this option to have the display switch to Receive mode after sending.

u. Isochronous operation (Option V) -- allows terminal to operate isochronously at speeds up to 2400 baud.

v. Data terminal ready control (Option W) -- provides a means of controlling the state of the Terminal Ready lead based on the number of characters in the receive buffer.

w. Line wrap (Option X) -- provides a means of causing the cursor to wrap when it reaches the end of the line.

x. Reject nulls (Option Y) -- provides a means of rejecting nulls received from the line.

y. Home on send (Option Z) -- enable this option to home the cursor whenever the display is placed in on-line or local send.

z. Stop bits in 5-level (Option AA) -- allows the stop bits used in 5-level operation to be either 1 or 1.5 stop bits.

aa. Transmission/Reception Speeds (Option ZZ) -- provides a means of setting the on-line transmission/reception speeds from 50-600 baud in 5-level operation and from 50-2400 baud in 8-level operation.

CHAPTER 4

OPERATING INSTRUCTIONS

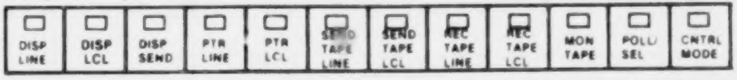
4-1. Controls, Switches, and Indicators.

a. Keyboard Controls (fig. 4-1, pg. 4-2).

(1) The alpha-numeric keys operate identically with those on a standard typewriter. That is, the keys normally generate numerals or lower case alphas. When the "SHIFT" key is also depressed, upper case alphas and punctuation characters are generated. Operation of the "CAPS LOCK" key (Locking) causes all alpha characters to be generated in upper case regardless of "SHIFT" key operation.

(2) The on-line control characters, appearing at the top of the alpha keys, are generated by first depressing the control key, then the alpha keys.

b. Operational Mode Control.



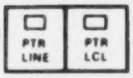
(1)

With both keys off, display is confined to message preparation from the keyboard. With DISP LINE on, the display can send or receive from the line. With the DISP LCL key on, the display can send or receive from other terminal devices locally. Both keys flash when data monitoring on the display is selected in the Control Mode. Keys stop flashing once they are deselected. With the display in the monitor mode, data received on-line as well as data from the local devices can be displayed.

(2)

When on, data can be sent from the display on-line or locally to a device or devices. When off, the display acts as a receiver.

(3)



With PTR LINE key on, printer will print received data of both sent and received data depending on option selection. With PTR LCL key on, printer will print all local data being transferred between the devices.

(4) When first turned on, the terminal comes up in the Selective Calling Mode automatically, with the PTR LINE key lighted. If the PTR LCL key is selected, data transfer must occur within 15 seconds; otherwise, the PTR LCL lamp turns off and PTR LINE turns on. This feature insures that the printer is available to receive data on-line when not being used to copy data locally.

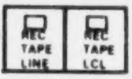
(5)

Operation of SEND TAPE LINE sends data on the Send Tape, on-line. SEND TAPE LCL activates data transfer from the Send Tape to other terminal devices locally, such as the printer or display.

(a) With both lamps off, the Send Tape can be accessed in the Control Mode to advance, rewind, and to list the Send Tape headings.

(b) The indicator lamp in either key will flash if the key is depressed while the Send Tape is sending. The Send Tape will continue to send until the end of the message. Then the indicator will turn off.

(6)



Depressing the REC TAPE LINE key conditions the Receive Tape to receive on-line. Similarly, depressing the REC TAPE LCL key conditions the Receive Tape to receive data from a local sending device.

(a) With both keys off, the Receive Tape is still operable in the Control Mode to rewind and list tape headings.

(b) When first operated, either key will flash until the tape has advanced to the next available recording area. If no recording area is available, the indicator will turn off (with the Receive Tape inoperable either on-line or in local).

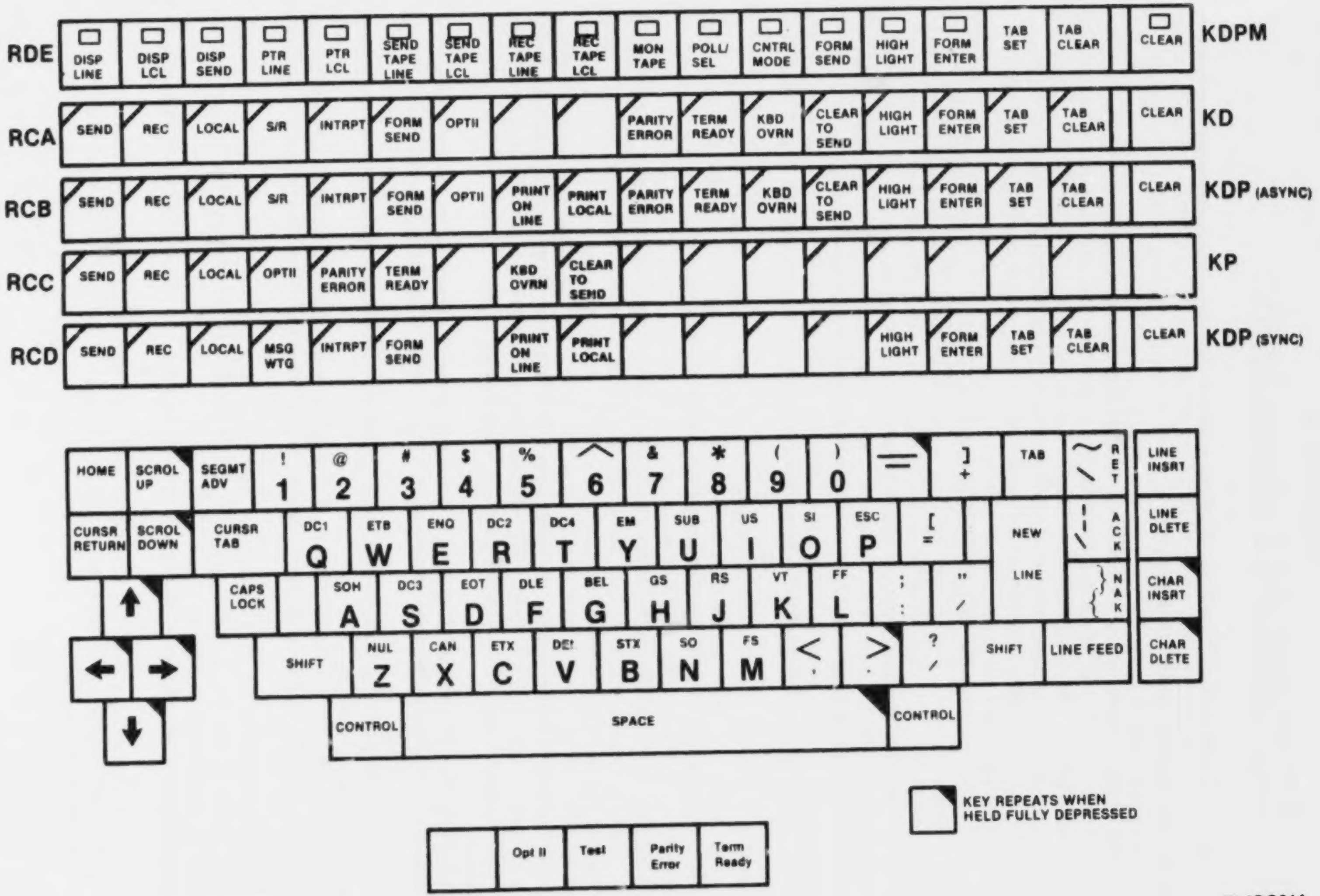


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Figure 4-1. OPCON Keyboard

(c) If the Receive Tape detects low tape (25 blocks from the end of the tape), either the REC TAPE LINE or REC TAPE LCL will flash. When end of tape is detected, the Receive Tape will continue to receive the message, then stop (indicator will turn off).

(d) If either key is turned off while a message is being received, the indicator will flash but the Receive Tape will continue to receive until the end of the message, then it will turn off.

(7) MON TAPE This key is an indicator only. When lighted, it tells the operator that a Monitor Tape is loaded in its assigned drive and operational.

(a) The Monitor Tape will record all data sent on-line in the Selective Calling Mode or On-Line Manual Mode. It does not copy data received on-line or data transferred in local.

(b) The indicator flashes when the tape reaches low tape (25 blocks from the end of the tape). If data is being received when low tape is reached, the tape will continue to record until the end of the message, then the indicator will turn off.

(c) When loaded in its drive, the tape automatically advances to the next available recording area. If no recording area is available on the tape, the indicator will turn off and the Monitor Tape will not record further data. An option in the terminal, if selected, requires that the Monitor Tape be present in its drive before the terminal can transmit on-line.

(8) POLL/SEL The POLL/SEL KEY indicator has three states: on, off, and flashing.

(a) With indicator on, the terminal is in the selective calling mode.

(b) With indicator off, the terminal can still send and receive on-line, without line protocol. In other words, sending and receiving are manually controlled.

(c) Indicator flashing means that a parity error was received. Depress key to reset.

(9) CNTRL MODE This allows the operator to perform a number of functions off-line. Depressing the CNTRL MODE key causes the terminal to display a protected list of functions.

(10) FORM SEND With the key off, only unprotected characters will be sent from the display, on-line or locally. With the key on, all data on the display will be sent, including protected, highlighted or not, and tab stops.

(11) HIGH LIGHT When depressed, indicator lights. An attribute character stored at cursor location denotes the start of an intensified field. All subsequent characters will be intensified. If FORM ENTER is used with HIGHLIGHT, the characters following will not be intensified, but will be displayed at half-intensity. When the key is turned off, an attribute character is stored which indicates the end of the highlighted field.

(12) FORM ENTER When depressed, indicator lights and causes a "protect" attribute character to be stored at cursor location, denoting the start of a protected field. When key is depressed again, indicator extinguishes and a "protect end" attribute is stored in the memory. All areas between the "protect" and "protect end" attributes, as well as the two attributes, form a "protected field". This field, excluding the attributes, will be displayed at half intensity with the FORM ENTER key lighted:

(a) Protected characters can be written, overwritten, moved, or cleared.

(b) If the data preparation requires short lines (lines less than 80 characters), protected line feeds can be used to provide a right hand margin.

(c) Overrides highlight feature and causes character to be displayed at half-intensity.

(13) TAB SET When TAB SET is depressed, it places tab stops on screen in column, from cursor to the end of the displayed text. Tab stops are not displayed.

(14) This clears tab stops from cursor down and to the right.

NOTE

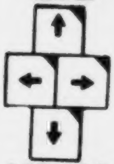
Depressing TAB CLEAR also clears any data between a Horizontal Tab (HT) mark (   ) and the cleared tab stop, to the end of the same line, unless protected data is present.

(15) This removes all unprotected data from cursor position to the end of the page. If FORM ENTER is on, then all data (including protected data) will be removed from the cursor position to the end of the page.

c. Cursor Controls (fig. 4-1, pg. 4-2).

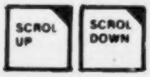
(1) *HOME* - Causes first segment to be displayed and moves cursor to first character position of the first line.

(2) *CURSOR RETRN* - Moves cursor to start of line.



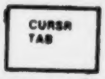
(3) *CURSOR POSITIONING* - Up arrow, left arrow, right arrow, and down arrow (Repeatable) - Moves cursor up, left, right, and down respectively.

(4) LEFT ARROW (←) - Generates back space code when terminal is on line, in ASCII (8 level) code.



(5) *SCROL UP AND SCROL DOWN (Repeatable)* - Moves displayed data up and down respectively.

(6) *SEGMENT ADVANCE* - Removes the 24 lines being displayed and displays the next whole 24 line segment.



(7) *CURSOR TAB* - Moves cursor to the first tab stop on the right, or to the start of the next line, or to the first unprotected character following protected data, whichever comes first.

d. Editing Controls

NOTE

Affects protected as well as unprotected data if FORM ENTER was depressed prior.

(1) *LINE INSERT* - Moves unprotected data down one line so that there is a line of space on the line the cursor is on. Does not occur if there are no lines of space at the end of the display memory, or if there are no lines of space above the first line below having protected data in it.

(2) *LINE DELETE* - Clears unprotected data from the line the cursor is on and moves all unprotected data displayed below up one line.

(3) *CHARACTER INSERT. (Repeatable)* - Moves unprotected data one character to the right so that there is a space at the cursor location. Does not occur if there are no character spaces at the end of the line, or if there are no character spaces ahead of the first protected character, or the first tab stop displayed on the right.

(4) CHAR DLETE *CHARACTER DELETE. (Repeatable)* - Clears unprotected character at cursor location and moves all unprotected data displayed on the right one character position to the left.

e. Other Controls (fig. 4-2, pg. 4-6).

(1) Display ON-OFF - Turns display module and OPCON on/off.

(2) Tube Tilt - Tilts display screen forwards and backwards to compensate for nearby lighting glare.

(3) Brightness - Increases and decreases intensity of displayed characters.

(4) Audible Tone - Sounds on any of the following conditions to assist operator during data preparation: Nearing end of line, at end of line, attempting to enter unprotected data on top of protected data, attempting to follow a new line character with data, attempting to insert a character or line where room does not permit.

(5) Paper - Feeds out blank paper, for as long as it is depressed. Illuminates when paper is low. The paper condition permits present print-out to continue but prevents another print-out from beginning until paper supply is re-filled.

(6) Form Advance - Feeds out forms, to the beginning of the next form.

(7) Printer ON/OFF Switch - Turns printer on/off.

(8) Cassette ON/OFF Switch - Turns cassette drive on/off.

(9) Main Power Switch - Turns pedestal units on/off.

4-2. MODES OF OPERATIONS: Operation of the Tempest Model 40/8B Data Terminal will follow one or more of the following operational modes:

a. Control Mode. This is an off-line mode which enables the operator to perform a number of operations.

(1) Enter the Control Mode by operating the CNTRL MODE key. The terminal responds by displaying a protected (unerasable) list of commands like this:

```
 1.   _             Five-Level Communications Interface
 2.   _             Single Message Mode
 3. P _ _ _         Send Tape Block Number
 4.   _ _ _         Receive Tape Block Number
 5.   _ _ _         Monitor Tape Block Number
 6.   _             List Send Tape Headings
 7.   _             List Receive Tape Headings
 8.   _             Monitor Data On Display
 9.   _ _ _         Erase Receive Tape
10.   _             Keyboard On-Line
11.   _             Tape Ports: ST =  RT =  MT =
```

(2) The commands are executed by entering the appropriate symbol in front of the commands and depressing the LINE FEED key on the operator console.

(3) Following is a brief description of all the 11 functions of the Control Mode:

(a) Line 1 - Five Level Communication Interface: To activate command, enter X in position 1 and depress the LINE FEED key. When the terminal is turned on, the 8-level ASCII interface is automatically activated. By executing command 1, the terminal is programmed for 5-level Baudot operation. To terminate command, delete X from position 1.

(b) Line 2 - Single Message Mode: To activate command, enter X in position 2. Activating this command conditions the terminal to transmit one message when polled. With this command not activated, the terminal will send all messages recorded on the Send Tape. To terminate command, delete X from position 2.

(c) Line 3 - Send Tape Block Number: When terminal is turned on, the Send Tape is automatically positioned at the beginning. By entering a specific block number following the P and depressing the LINE FEED key, the Send Tape positions itself to the block number, ready to send it, when requested to do so. An R entered over the P in this command and depressing LINE FEED rewinds the tape. Tape should be rewound before it is removed from its drive.

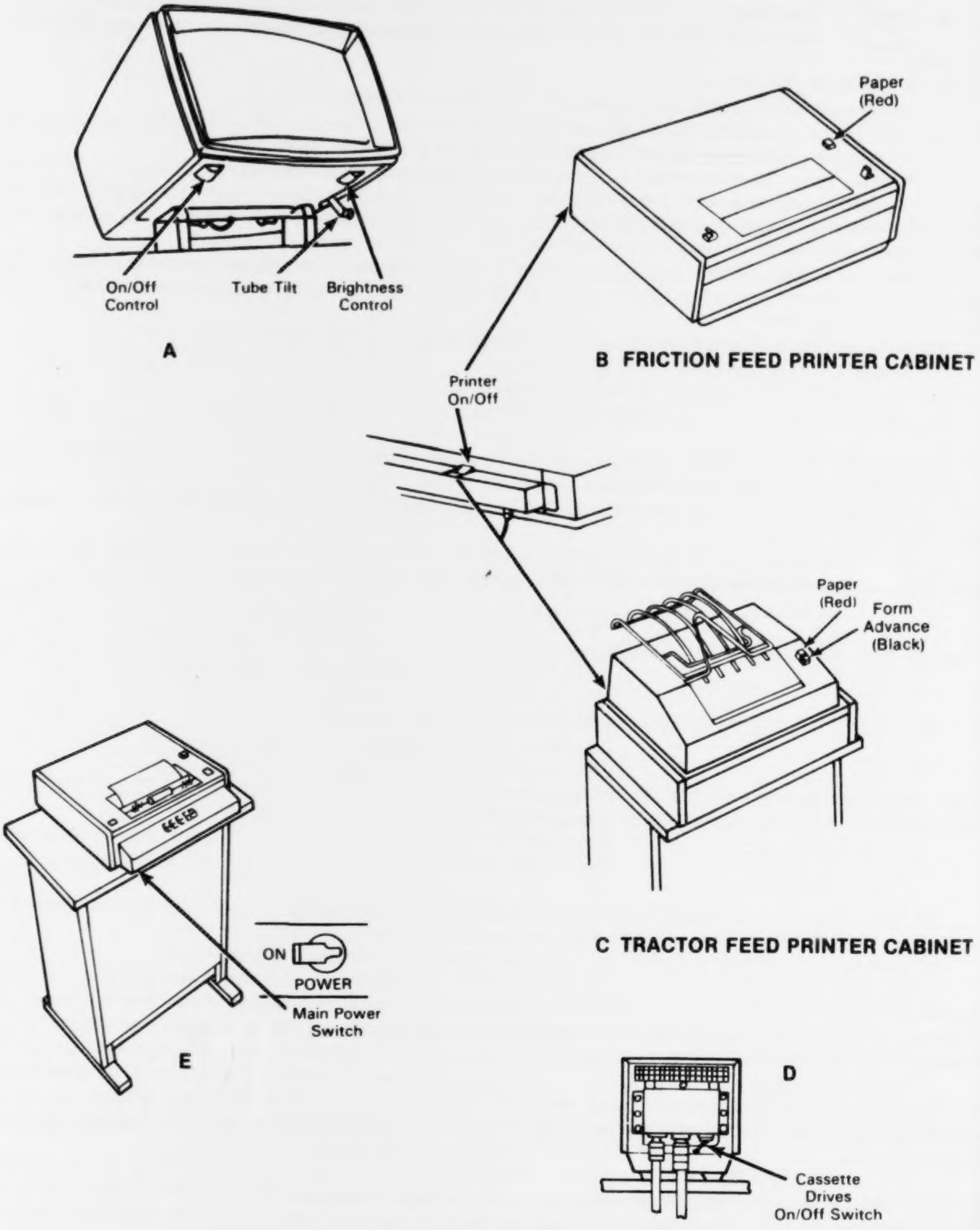


Figure 4-2. Other Controls

(d) Line 4 - Receive Tape Block Number: Displays the latest data block received. When the Receive Tape device is turned on, the tape automatically advances to the next unrecorded portion of the tape and that block number is displayed in this line. An R placed in line 4 and executed, rewinds the Receive Tape. Tape should be rewound before it is removed from its drive.

(e) Line 5 - Monitor Tape Block Number: As with lines 3 and 4, line 5 indexes the last monitored data block. When inserted in its drive, the tape automatically advances to the unrecorded portion and that block number is displayed in this line. An R placed in line 5 and executed rewinds the Monitor Tape. Tape should be rewound before it is removed from its drive.

(f) Line 6 and 7 - List Send Tape Heading: Entering X and depressing the LINE FEED key causes a listing of the first 55 characters of each message preceded by their block numbers of the Send (line 6) or Receive Tape (line 7) to be displayed. Depressing the SPACE key on the operator console causes 24 additional messages to be displayed. Operator continues to depress the SPACE key until all messages are reviewed.

(g) Line 8 - Monitor Data on Display: Data being received or sent on-line can be monitored on the display as it is being sent, received, or transferred locally (as from tape to printer) by placing an X in line 8 and depressing the LINE FEED key.

(h) Line 9 - Erase Receive Tape: Typing XXX and depressing LINE FEED causes the erase function on the Receive Tape to take place so that the cassette can be used again. Tapes must be rewound and unassigned before erase function can be performed.

(i) Line 10 - Keyboard On-Line: This command puts the keyboard on-line in conversational communications with a distant terminal. Characters will be transmitted on-line as they are generated from the keyboard. Type X and depress LINE FEED key.

(j) Line 11 - Tape Ports ST = RT = MT = : This command enables the operator to reassign which tape drive will be the Send, Receive, or Monitor. By placing an X at the beginning of the line and reassigning the number adjacent to ST (Send Tape), RT (Receive Tape), and MT (Monitor Tape), the operator determines which tape drive sends, receives, or monitors. The assignment numbers are: 1, 2, and 3. The assignment of the tapes on power-up is determined by an installer option. Tapes must be rewound and unassigned before erase function can be performed.

b. Local Mode.

(1) Local Operation of the Tempest Model 40/8B Data Terminal consists primarily of generating, correcting, rearranging, and duplicating messages both new and those which have already been received.

(2) Preliminary Procedures:

CAUTION

No cassette tape should be in the latch position when power is turned on or off. Damage to cassette tape may result.

(a) Make sure all power switches are ON. (fig. 4-2, pg. 4-6)

(b) Adjust the display Brightness and Tilt controls.(fig. 4-2(A), pg. 4-6)

(c) Insert either the Send, Receive, or Monitor Tape cassette into the holder with the proper side forward (fig. 4-3(A) and (B), pg. 4-8). Slide release levers inward to open lid.

(d) Inserting a rewound cassette into the holder will cause the set to go through a self-check procedure unless the tape is Write-Inhibited (tab-up). The Run/Test lamp at the upper left end of the cassette lid should light and remain lighted until test is completed.

NOTE

If the test is successful, the lamp will extinguish for the Receive Tape and remain ON for the Send and Monitor Tape. If the test fails, the Run/Test will cycle ON and OFF. Repeat test by reinstating cassette. Should the test continue to fail, try another cassette, preferably one known to be good.

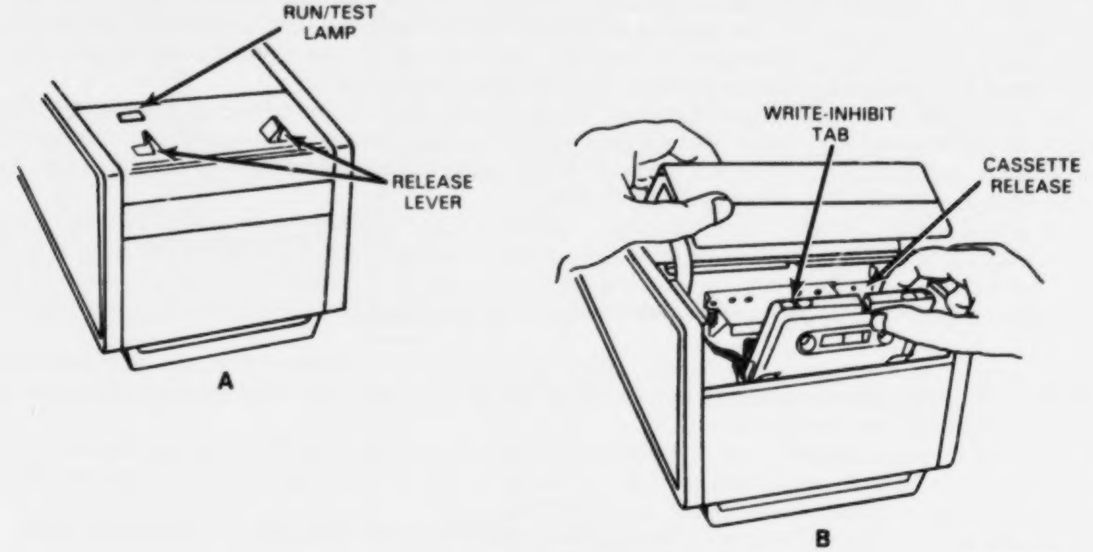


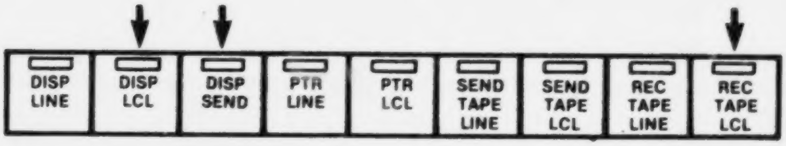
Figure 4-3. Cassette Loading/Indicators

(3) Display to Receive Tape Procedure:

(a) End message on display with EOT or ETX (or GS if message is to be continued).

(b) Insert Rec Tape cassette.

(c) Place cursor at beginning of message.



(d) Depress REC TAPE LCL key; indicator flashes while the tape is being positioned. Once positioned the indication is steady.

(e) Depress DISP SEND key; indicator lights.

(f) Depress DISP LCL key; indicator lights.

(g) Depress REC TAPE LCL key; indicator extinguishes.

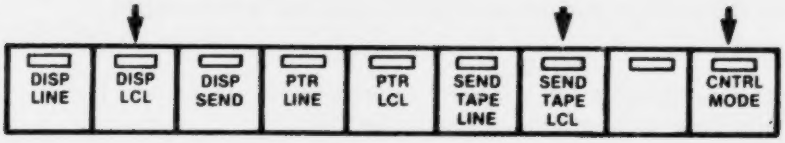
(h) Rewind Rec Tape before removing from cassette unit. (para. 4-2.a.(3)(d))

(4) Send Tape to Display Procedure

(a) Insert Send Tape cassette.

(b) Depress CNTRL MODE key; indicator lights.

(c) Position Send Tape to desired block(s) (para. 4-2.a.(3)(c)).

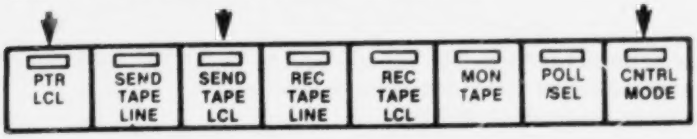


(d) Depress CNTRL MODE key; indicator extinguishes.
(e) Depress DISP LCL key; indicator lights.
(f) Depress SEND TAPE LCL key; indicator lights.

NOTE

Data will be displayed from the beginning of selected block of the Send Tape to GS, EOT, or ETX (Single Message Mode) of that message. At this time, the DISP LCL indicator extingushes. If the message selected is longer than the display's line limit, operating the DISP LCL key will retrieve additional line, one line at a time.

(5) Send Tape to Printer Procedure:
(a) Insert Send Tape cassette.
(b) Depress CNTRL MODE key (indicator lights).
(c) Position Send Tape to desired block.

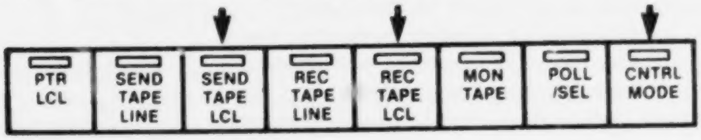


(d) Depress CNTRL MODE; key indicator extinguishes.
(e) Depress PTR LCL key; indicator lights.
(f) Depress SEND TAPE LCL key; indicator lights.

NOTE

Data is copied by the printer from the beginning of the selected block to an EOT or ETX (Single Message Mode) or to the end of the tape. At end of transmission, the SEND TAPE LCL indicator extinguishes. Rewind Send Tape before removing from cassette unit. (Paragraph 4-2.a(3)(c))

(6) Send Tape to Receive Tape Procedure:
(a) Insert Send Tape and Rec Tape cassettes.
(b) Depress CNTRL MODE key; indicator lights.
(c) Position Send Tape to desired block.



(d) Depress CNTRL MODE key; indicator extinguishes.
(e) Depress the REC TAPE LCL key; indicator lights.
(f) Depress the SEND TAPE LCL key; indicator lights.

NOTE

Data from the Send Tape will be transferred to the Rec Tape from the beginning of selected block(s) to an EOT or ETX (Single Message Mode) or to the end of the Send Tape. At end of transmission, the SEND TAPE LCL indicator extinguishes.

(g) Rewind Send and Rec Tapes before removing either tape from cassette unit.

c. On-Line Mode Selective Calling.

NOTE

The 40/8B terminal is automatically placed on-line when power to the terminal is turned ON.

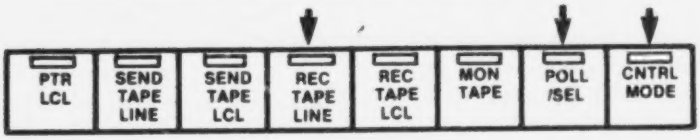
(1) Send Tape Procedure:

(a) Depress POLL/SEL key if indicator is not on.

(b) Insert Send Tape cassette.

NOTE

For terminals optioned for Monitor Tape, insert a Mon Tape cassette (MON TAPE indicator lights) to enable terminal to transmit to the line.



(c) Depress CNTRL MODE key; indicator lights.

(d) Position Send Tape to desired block(s), if necessary.

(e) Select single or multiple message mode. If you wish to monitor traffic on your display at this time, enable Monitor Data On Display.

(f) Depress CNTRL MODE key; indicator extinguishes.

(g) Depress SEND TAPE LINE key; indicator lights.

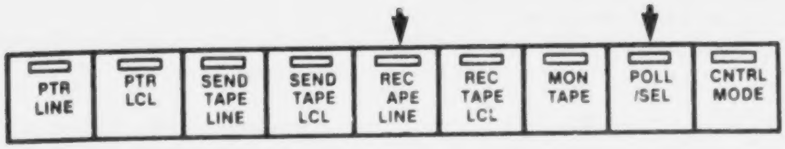
NOTE

When terminal is polled, transmission of message will automatically begin and end at message ETX. If Single Message Mode is enabled, SEND TAPE LINE indicator extinguishes and must be re-entered manually to send another message. In normal Multiple Message Mode, the next message will be sent automatically when the terminal is next polled. Rewind Send Tape before removing from cassette unit.

(2) Receive Tape Procedure:

(a) Depress POLL/SEL key if indicator is not on; indicator lights.

(b) Insert Receive Tape cassette.



NOTE

If you wish to monitor traffic on your display, enter the Control Mode and enable monitor data on display.

(c) Depress REC TAPE LINE key; indicator lights.

NOTE

When terminal is selected to receive, messages will be received on tape starting with SOH until the end of the EOT deselect is received. The REC TAPE LINE indicator will remain ON until manually turned OFF or until the tape is filled. Rewind Rec Tape before removing from cassette unit.

(3) Send From Display Procedure:

(a) Operate the DISP SEND key on.
(b) Operate the DISP LINE key on.
(c) Operate PTR LINE key if printed copy of message is required.

NOTE

When terminal is polled the message will be automatically sent. If Monitor Tape is present it will record the message.

(4) Sending from Send Tape Procedure:

(a) Enter control mode by operating the CNTRL MODE key.
(b) If single message is to sent, execute the Single Message command, otherwise multiple messages may be sent.
(c) If message is to be monitored on the display, execute the Monitor Data on Display command.
(d) Advance the Send Tape to the message to be sent.
(e) Depress PTR LINE key if a printed copy of message is required.
(f) If message is to be monitored on the display:
  1. Exit Control Mode.
  2. Depress DISP LINE:
  3. Depress SEND TAPE LINE key on.
(g) When terminal receives its polling code, the message will be sent.

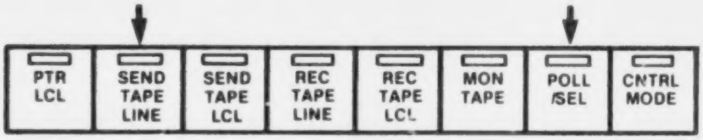
d. On Line Mode Manual

(1) Send Tape Procedure:

(a) Depress POLL/SEL key if indicator is on; indicator extinguishes.

(b) Insert Send Tape cassette.

(c) At this point, prepare tape to send as described for Selective Calling Operation.



(d) Depress SEND TAPE LINE key.

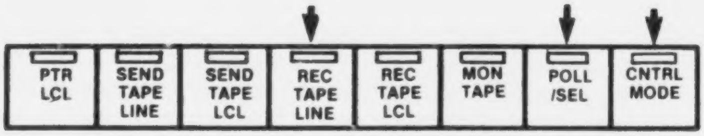
NOTE

If another device has already been prepared to send on-line, the SEND TAPE LINE indicator will remain off. If no other device has been prepared to send, the indicator will light and the tape will begin sending. Depending on the single/multiple message mode selected, the tape will stop sending either at the end of the message, or at the end of the last message on the tape. The SEND TAPE LINE indicator will then extinguish. Rewind Send Tape before removing from cassette unit.

(2) Receive Tape Procedure:

(a) Depress POLL/SEL key if indicator is on; indicator extinguishes.

(b) Insert Rec Tape cassette.



(c) If you wish to monitor traffic on your display, enter the Control Mode and enable monitor data on display (refer to Control Mode).

(d) Depress REC TAPE LINE key; indicator lights.

NOTE

As long as the REC TAPE LINE indicator is on, all messages received will be taped. Rewind Rec Tape before removing from cassette unit.

(3) Send from Display Procedure:

(a) Depress DISP SEND key.

(b) Depress DISP LINE key.

(4) Send from the Send Tape Procedure: Depress SEND TAPE LINE key.

(5) Receive on the Display Procedure: Depress DISP LINE (DISP SEND key off).

e. Keyboard On-Line Mode

(1) In this mode, the 40/8B terminal is placed in conversational communications with the distant terminal (computer). This mode is especially useful for updating files, etc. because the keyboard can transmit on-line, one character at a time.

(2) In this mode, only the keyboard is on-line. The terminal may be optioned to display the data being sent. The Send Tape is inoperative. As for receiving, data may be received on the display (DISP LINE on) and the printer (PTR LINE on).

(3) To place the keyboard on-line, extinguish the POLL/SEL lamp, enter the control mode, and execute command 10-Keyboard On-Line. Now exit the control mode and type on the keyboard. If hard copy is required, leave PTR LINE key on.

4-3. On-Line Terminal Controls.

a. RECEIPT OF ASCII CONTROLS: Receipt of the following ASCII controls cause the following actions to be performed: Receipt of Baudot controls (CR, LF, BELL) will have an equivalent effect.

(1) NUL (Null) - Displays symbol NU but performs no function.

(2) DELETE - Displays ▨ but performs no function.

(3) ETX (End of Text) - Displays symbol EX and switches terminal from receiving mode to local mode, unless option elected not to. Also feeds out 16 blank lines of paper from printer, if option elected. GS (Group Separator) displays symbol GS and performs same function as ETX.

(4) EOT (End of Transmission) - Displays symbol ET and switches terminal from receiving mode to local mode, unless opotion elected not to. Ignored by printer terminal.

(5) BEL (Bell) - Displays symbol BL and causes alarm to sound, and cursor to increment.

(6) BS (Back Space) - Moves cursor left, one character.

(7) HT (Horizontal Tab) - Moves cursor to first tab stop on right. If there is no tab setting on right, cursor moves to start of next line. If there is protected data en route, the cursor stops instead at first unprotected character following protected data.

(8) NL (New Line) - Displays symbol ≡ , and moves cursor to start of next line, and causes printer to print next character at start of next line. Also scrolls display up one line if cursor was on last line on screen.

(9) VT (Vertical Tab) - Causes printer to print next character at start of next line.

(10) FF (Form Feed) - Performs the same function as line feed. Can be optioned to feed out paper to the end of form.

(11) CR (Carriage Return) - Displays symbol ◄ , and causes printer to print next character at start of line, or optionally to perform new line function.

(12) LF (Line Feed) - Displays ↓ and causes printer to print next character on new line in next character position.

b. RECEIPT OF ESC (ESCAPE) SEQUENCES: Receipt of the following ESC (Escape) Character sequences cause the following actions to be performed.

(1) ESC 0 (Zero) - Sets a tab stop at the cursor locaiton, on that line only.

(2) ESC @ sequence - Moves cursor to first tab stop on right; if none, to start of new line. If protected data is on the way, it stops at first unprotected space past protected data.

(3) ESC 1 sequence - Sets tab stops on that line and all lines below, to end of the memory.

(4) ESC 2 sequence - Clears tab stops from the cursor location to the end of the line, on that line, and all tabs in the column(s) below and to the right.

(5) ESC 3 - Causes characters that follow to be highlighted.

(6) ESC 4 - Causes characters that follow to not be highlighted.

(7) ESC 7 - Moves cursor up one line.

(8) ESC B - Moves cursor down one line.

(9) ESC C - Moves cursor right, one character.

(10) ESC G - Moves cursor to start of line.

(11) ESC H - Advances display to first segment and moves cursor to start of first line.

(12) ESC J - Clears all unprotected data from all lines below line cursor is on, and to the right of the cursor on the line the cursor is on.

(13) ESC R - Advances display to first segment, moves cursor to start of first line, and clears all data from display memory whether protected or unprotected, and all tab stops followed by FORM ENTER off.

(14) ESC L - Creates a space for additional line of data.

(15) ESC M - Deletes a complete line of data.

(16) ESC ∧ - Allows addition of a character a line.

(17) ESC P - Deletes a character from a line.

(18) ESC S - Causes display to scroll up.

(19) ESC T - Causes display to scroll down.

(20) ESC U - Causes display to advance one complete segment.

(21) ESC W - Puts terminal in protected data mode, during which all received data will be displayed as protected data, and during which receipt of ESC J will cause protected as well as unprotected data to be cleared.

(22) ESC X - Removes terminal from protected data mode.

c. TRANSMISSION OF ASCII CONTROLS: Transmission of the following ASCII controls from the terminal cause the following actions to be performed by the terminal:

(1) ETX (End of Text) - Halts transmission and switches terminal from send mode to receive or local mode, depending on option elected, or does not switch mode at all if option elected not to.

(2) EOT (End of Transmission) - Halts transmission and switches terminal from send mode to receive mode unless elected not to.

d. TRANSMISSION OF ESC (ESCAPE) SEQUENCES: Transmission of the following ESC (Escape) character sequences can be elected to accompany the transmission of data in display memory:

(1) ESC 3 - Precedes transmission of each block of highlighted characters.

(2) ESC 4 - Follows transmission of each block of highlighted characters.

(3) ESC W - Precedes transmission of each block of protected characters.

(4) ESC X - Follows transmission of each block of protected characters.

(5) ESC 0 (Zero) - Transmitted ahead of character at any location where there is a tab stop setting.

4-4. DATA PREPARATION

a. Line Ending Controls

(1) Each line of displayed data should be ended with a NL (New Line) control character, which is displayed as ≡ . If, however, in the course of editing this character is overlooked, the Automatic New Line feature of the terminal will insert it for you, but only at the 81st character position of the line - the intervening positions between the last data character and ≡ being automatically filled with space characters.

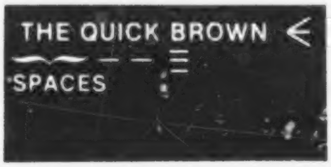
(2) From this it can be seen that it is more economical to insert a NL at the end of your data than rely on the Automatic New Line feature. In other words, each time this feature is employed, the processor sees a full 80 character line, even though you may be sending only a few characters of actual data. Also, no characters can be transmitted to the right of the NL symbol.

(3) Terminal response to the line ending controls are as follows:

Line Ending Control			Sent & Received On Line	Function Performed on CRT	Function Performed on Printer
Key	Function	Symbol			
Return	Carriage Return	←	CR	Return Cursor to start of next line	Return
Line Feed	Line Feed	↓	Line Feed (New Line)	Return Cursor to start of next line.	New Line
New Line	CR, CR, LF	≡	CR, CR, LF	Return Cursor to start of next line.	New Line

(4) To underline characters: End the line of data in which characters are to be underlined with CARRIAGE RETURN (←). On next line insert underline character beneath each character to be underlined. Terminate this line with NEW LINE (≡). When transmitted on-line or printed locally, data will be printed as shown below.

On Display



THE QUICK BROWN ←

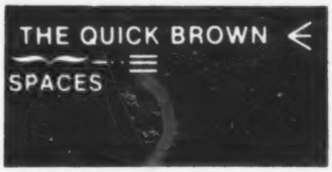
SPACES

On Printer

THE QUICK BROWN

(5) To accent characters: Follow same procedure as for underscoring. End first line of data with CARRIAGE RETURN (←). On next line insert the accent marks below the character to be accented. Terminate this line with NEW LINE (≡). Printer will copy as shown below.

On Display



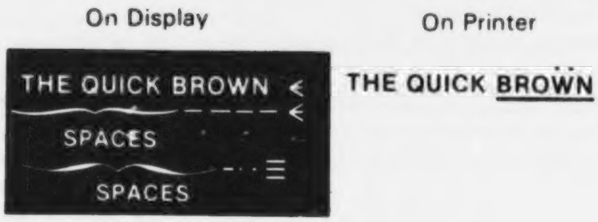
THE QUICK BROWN ←

SPACES

On Printer

THE QÜICK BROWN

(6) To underline and accent characters at the same time: End first line of data with CARRIAGE RETURN (←). Prepare a third line with accent character(s) beneath characters to be accented and terminate this line with NEW LINE (≡). Printer will copy as shown below.



b. Tabbing

(1) Tabbing is achieved by sending spaces between the columns in tabulated data. TAB SET and TAB CLEAR permits you to set and clear tab settings on the display, and CURSR TAB permits rapid movement of the cursor between settings. When the data is read out to the line from the display memory, SP's (spaces) will be sent for all spaces tabbed through by means of the CURSR TAB key. If this is not satisfactory, for receipt by a remote character-at-a-time printer for example, you may want to generate the HT (Horizontal Tabulation) control instead of using the CURSR TAB key. Generation of HT causes the symbol ▶ to be displayed on sending unit only, the function to occur, and HT to be sent.

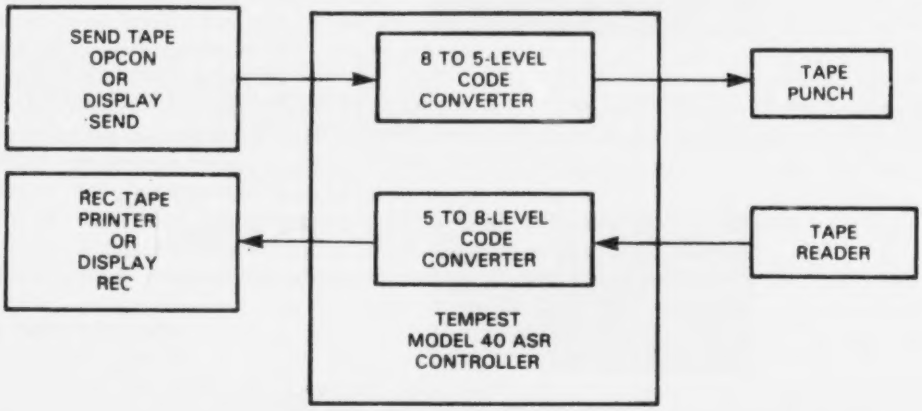
(2) TAB (Horizontal Tab) - Displays symbol ▶ and moves cursor to first tab stop on right, if equipped with tab control feature (see TAB SET). All unprotected characters between (▶) character and next tab stop will be changed to spaces. If there is no tab setting on right, cursor moves to start of next line.

NOTE

Do not use TAB unless instructed to do so. See CURSR TAB.

4-5. Tape and Editing Preparation

a. The Tempest Model 40/8B Data Terminal is placed in the Tape Prep and Edit mode by entering the Control Mode and selecting the 5-level Communication Interface . When in the Tape Prep and Edit Mode, all data going to or coming from the line goes through an 8 to 5-level or 5 to 8-level conversion.


SEND TAPE OPCON OR DISPLAY SEND
8 TO 5-LEVEL CODE CONVERTER
TAPE PUNCH
REC TAPE PRINTER OR DISPLAY REC
5 TO 8-LEVEL CODE CONVERTER
TAPE READER
TEMPEST MODEL 40 ASR CONTROLLER

DATA FLOW FOR TAPE PREP
EDIT MODE OPERATION

b. Message Formatting: All messages prepared on the display to be transmitted on-line should start with an SOH (Start of Heading) and end with an ETX (End of Text) or EOT (End of Transmission). A message that is longer than 72 lines can be prepared in sections of 72 lines or less by terminating each section with a GS (Group Separator) character. As each section is completed, it is sent to the REC TAPE and the final section should be ended with an ETX or EOT. When the message is sent to the line, the GS characters are suppressed and the message is sent as one continuous message starting with SOH and ending with ETX or EOT.

c. Message Preparation from 5-Level Tape.

(1) A 5-level tape with short message (less than 72 lines) may be transferred directly to the display. It should then be formatted and handled as described above.

(2) A 5-level tape containing a message greater than 72 lines, or multiple messages, can be transferred directly to the REC TAPE cassette. The cassette is then rewound and placed in the Send Tape position. It may then be sent to the display for formatting and editing. The readout may be stopped manually by operating the DISP LCL key or will stop automatically when the 60th line is displayed.

NOTE

The automatic stopping at the 60th line allows 12 lines for reformatting and editing prior to the new Rec Tape.

(3) Additional lines may be retrieved one at a time by depressing the DISP LCL key.

4-6 Printer Operation.

a. The printer provides hard copy of messages originated locally and messages transmitted or received on-line.

b. The printer prints or performs all characters generated by a corresponding operator console except as follows:

(1) Control characters do not print.

(2) Printer may be optioned to print the upper case equivalent on receipt of a lower case letter.

(3) Errored characters may be printed as * (asterisk).

NOTE

Data exceeding the printer line length will be printed on next line.

c. In the event of a NEW LINE is not received as the last character of a line, a new line function will be executed by the page printer. If the next character is a NEW LINE (character following an internally executed NEW LINE is a NEW LINE) the received NEW LINE will not be performed.

d. Messages prepared locally and messages received or transmitted on-line are copied by basic operating routines that follow.

e. Friction Feed Printer (fig. 4-2(b), pg. 4-6):

(1) The Model 40 friction or tractor feed printer is capable of printing the full 96 character ASCII code character set or to print a 64 character monocase character set

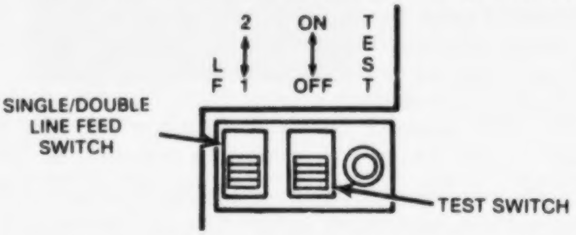
(2) The Model 40 friction feed printer shown in prints on standard rolled single-ply paper up to 8-1/2 inches wide. Your friction feed printer may be modified to accomodate up to 3 ply rolls of paper for multiple copy applicaitons.

(3) There is a red button located on top of printer. When depressed, paper in page printer advances. Paper feed out will be continuous until button is released. PAPER button lights when a low or out-of-paper condition exists. Extinguishes when paper supply is replenished.

NOTE

- PAPER button permits manual paper feed. Paper may automatically feed out when power is turned on or at end-of-message.
- An optional paper winder may be provided.

(4) The printer normally prints six lines to the inch, but can be selected to print three lines to the inch by moving the single/double line feed lever (located under the printer cover) from 1 to 2.



SWITCH PANEL · COVER OPEN (Right Side)

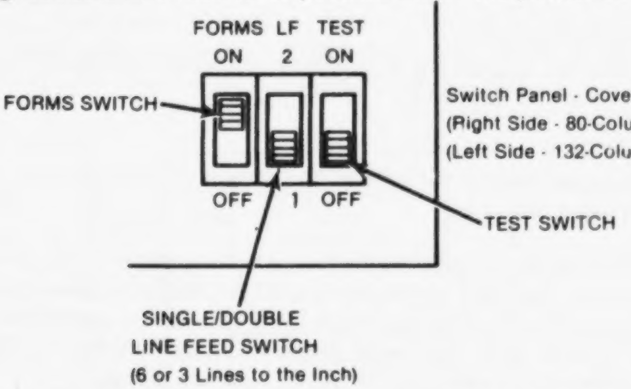
f. Tractor Feed Printer (fig. 4-2(c), pg. 4-6).

*(1)*The 80 and 132-column tractor feed printer uses standard fanfold paper. Multicopy allows up to five copies plus the original. Width of paper between feed holes can be between 3-5/8 inches (paper width 4-1/4 to 9-1/2 inches) for 80-column printers; up to 14-1/2 inches (paper width up to 15 inches) to 9 inches for 132-column printers.

(a) Paper When Paper Button is depressed, paper feed out will be continuous until button is released. Button lights when an out-of-paper condition exists. Replenish paper supply to extinguish lamp.

(b) Form Advance When the Form Advance Button is depressed momentarily, forms will advance until next initialized form position is reached.

(2) The printer normally prints six lines to the inch, but can be selected to print three lines to the inch by moving the single/double line feed lever (located under the printer cover) from 1 to 2.



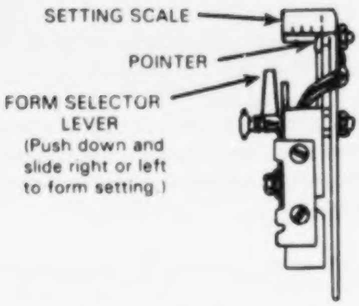
Switch Panel - Cover Open
(Right Side - 80-Column)
(Left Side - 132-Column)

(a) FORMS switch On - Enables the printer to form feed on receipt of FF and stop at the start of the next form. Characters will not print during the on-line form feed operation.

(b) FORMS switch ON and FORM ADVANCE button depressed, in the on-line mode, does not prevent printing. Also, the printer feeds out paper to the start of the next form after the FORM ADVANCE button is released.

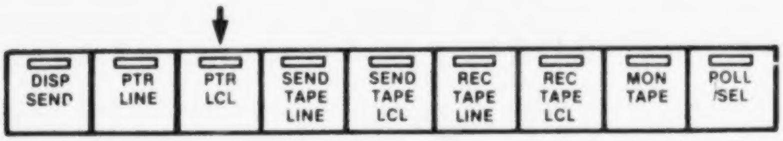
(c) FORMS switch OFF - Causes FF character to be converted to the new line function. When depressed, the FORM ADVANCE function causes continuous paper feed out until button is released.

(d) Form Selector - Located under the cover on the left side of the printer. Depressing the selector lever and sliding the pointer causes different form lengths per belt color. The blue belt is standard.


SETTING SCALE
POINTER
FORM SELECTOR LEVER (Push down and slide right or left to form setting.)

FORM SELECTOR (Left Side)

g. Local Operation: Depress PTR LCL key; indicator lights.

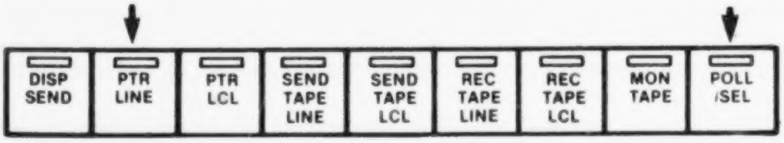


NOTE

- Messages prepared locally will be printed on the page printer as long as the PTR LCL indicator is in the lighted condition.
- When the terminal is in the Selective Calling Mode (POLL/SEL indicator on), the printer automatically resides in the PTR LINE condition. When PTR LCL key is depressed, data transfer must start within a time-out period or the printer will revert to the PTR LINE condition.

h. On-Line Operation (Selective Calling):

(1) Depress POLL/SEL key if indicator is not on. POLL/SEL indicator lights.



(2) Depress PTR LINE key; indicator lights.

NOTE

When the printer is turned ON in the Selective Calling Mode, the printer automatically resides in the line condition. The printer will then respond to its select code and copy any data sent to it.

(3) The printer on-line operation is affected by several options that may be selected at the time of installation (refer to Option Record Sheet). These options are described as follows:

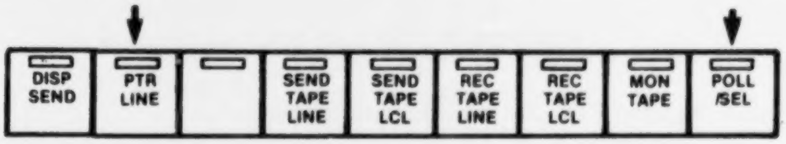
(a) Printer to copy send data - With this option enabled, the printer will automatically copy all data sent from the terminal.

(b) Printer to copy echo-back data - Within the echo copy feature enabled, the printer will copy all data on the receiver data line (i.e., received data and echoed send data).

(c) Printer on-line to transmit - When this option is selected, terminal cannot transmit unless the PTR LINE indicator is in the lighted condition.

i. On-Line Operation (Manual):

(1) Depress POLL/SEL key if indicator is on. POLL/SEL indicator extinguishes.



(2) Depress PTR LINE key; indicator lights.

NOTE

The printer will copy all sent and received data. However, if the printer is copying data from the send line, it will not be able to copy any received data until an ETX is received. At this time, it will copy from whichever line that next has traffic on it.

(3) As in the selective calling operation, options selected during installation may affect printer on-line manual operation. The printer on-line to transmit is inactive in the on-line manual operation.

CHAPTER 5
OPERATOR MAINTENANCE

SECTION I. GENERAL

5-1. **SCOPE OF OPERATOR'S MAINTENANCE.** The operator's duties do not require tools or test equipment other than those listed in Paragraph 5-2. The maintenance requirements are limited to those duties as follows:

a. Preventive maintenance.
b. Cleaning exterior of components.
c. Replenishing paper.
d. Changing printer ribbon.
e. Set is properly grounded.
f. All cables are properly connected and seated.
g. Options are identified and properly recorded (fig. 5-1, pg. 5-2).

5-2. **MATERIALS.** The following items are required for operator maintenance.

a. Tool Kit, TK-101/G (NSN 5180-00-064-5178).
b. Freon TF, Degreaser (NSN 6850-00-105-3084).
c. Mineral Spirits (local purchase).
d. Mild Detergent solution (local purchase).

SECTION II. PREVENTIVE MAINTENANCE CHECKS AND SERVICE (PMCS)

5-3. **GENERAL.**

a. Preventive maintenance is the systematic care, servicing and inspection of equipment to prevent the occurence of trouble, reduce downtime and to insure that the equipment is serviceable.

b. The procedures given in Table 5-1 explains routine systematic care and cleaning essential to proper upkeep and operation of the terminal at specific intervals. The table indicates what to check, how often to check, how to check and what conditions will cause the equipment not to be ready/available for readiness reporting purposes.

c. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

d. The operator should observe the following rules concerning PMCS (Table 5-1):

(1) Before operating always keep in mind the cautions and warnings. Perform your "Before" (B) PMCS.

(2) While you operate always keep in mind the cautions and warnings. Perform your "During" (D) PMCS.

(3) After you operate, be sure to perform the After (A) PMCS.

e. If your equipment fails to operate, refer to Chapter 7 of this manual for troubleshooting procedures. Report any deficiencies to organizational maintenance using the proper forms as specified in TM 38-750.

f. Table 5-1 specifies checks and services that must be accomplished by the operator on a weekly and monthly basis and under the following special conditions:

(1) When the equipment is initially installed (monthly)

(2) If the equipment is maintained in a standby (ready for immediate operation) condition (monthly)

(3) When the equipment is reinstalled after removal for any reason (monthly)

(4) Within designated intervals, these checks are to be performed in the order listed: B-before operating, D-during operation, A-after operation, W-weekly, M-monthly, and H-2000 HRS.

(5) Any deficiencies noted by the operator beyond his capability to correct are to be reported to organizational maintenance.

Identification plates are present on the lower portion of the wired frame. The code stamped on the plate identifies the complete assembly (with circuit cards).

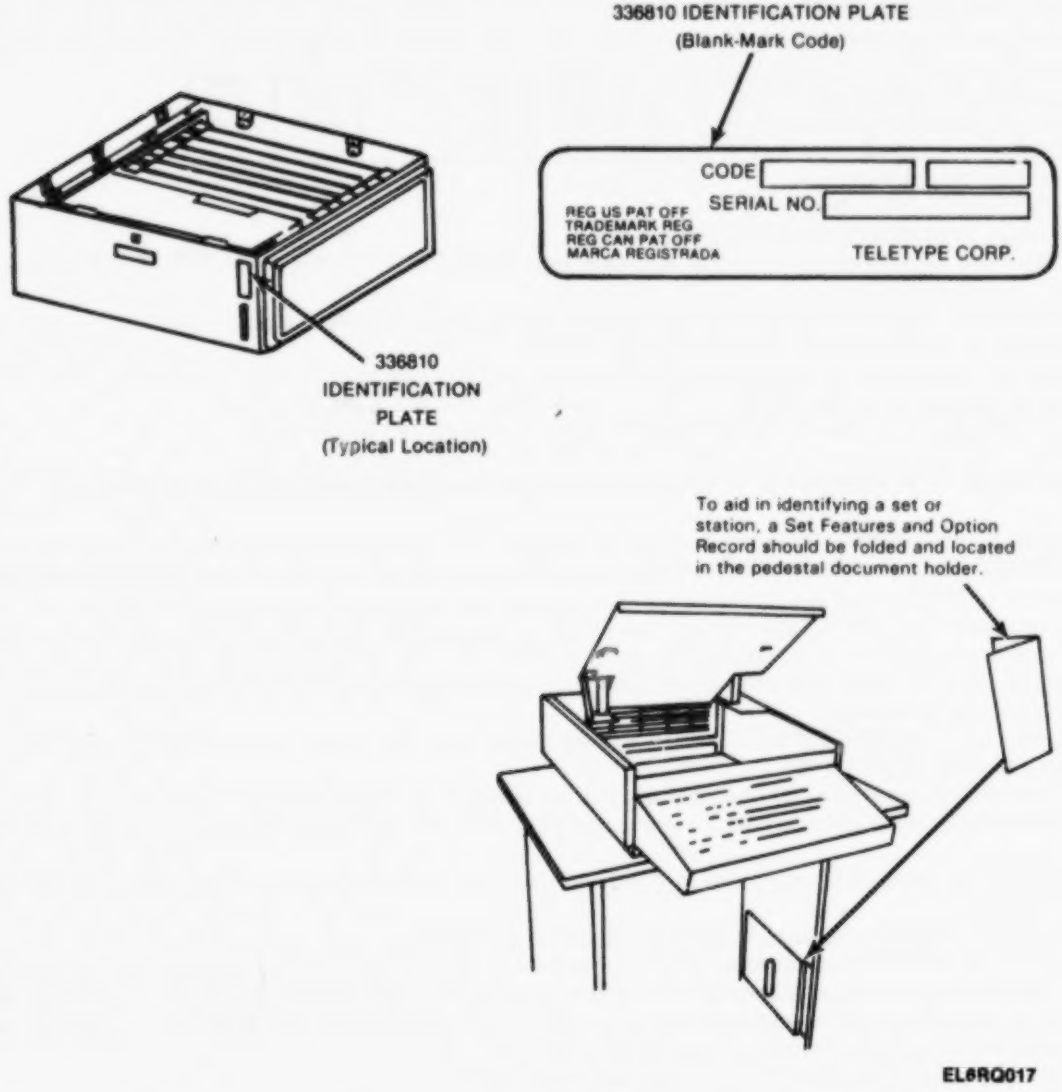

336810 IDENTIFICATION PLATE
(Blank-Mark Code)
CODE
SERIAL NO.
REG US PAT OFF
TRADEMARK REG
REG CAN PAT OFF
MARCA REGISTRADA
TELETYPE CORP.
336810
IDENTIFICATION
PLATE
(Typical Location)
To aid in identifying a set or station, a Set Features and Option Record should be folded and located in the pedestal document holder.
EL6RQ017

Figure 5-1. Identification Plate and Option Record Location

g. For purposes of this manual, a month is defined as 30 calendar days of eight hour-a-day operation. If the equipment is operated more than eight hours a day, monthly maintenance intervals should be adjusted as follows:

Hour-a-Day Operation	Monthly PMCS Required (Calendar Days)
8	30
16	15
24	10

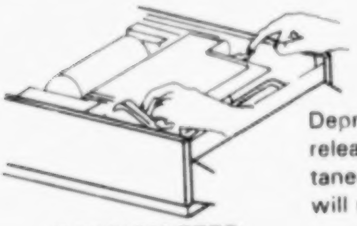
h. Equipment in limited storage (maintenance service required before being operated) does not require PMCS.

i. When you are doing any PMCS or routine checks, keep in mind the warnings and cautions.

5-4. PRINTER ACCESS. To replace the paper, ribbon, or form belt, you must first have access to the printer area. Access to the printer under the display is different than adjacent or separate printers. Refer to the following appropriate instructions.

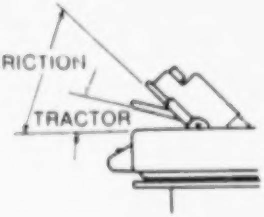
a. Friction and Tractor feed access:

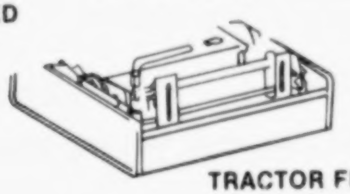
(1) Turn power switch off.
(2) Open printer cover and raise printer as shown below.
(3) Lift printer until release mechanism "clicks" into its locked position.



Depress both printer release levers simultaneously. Printer will rise slightly.

FRICTION FEED



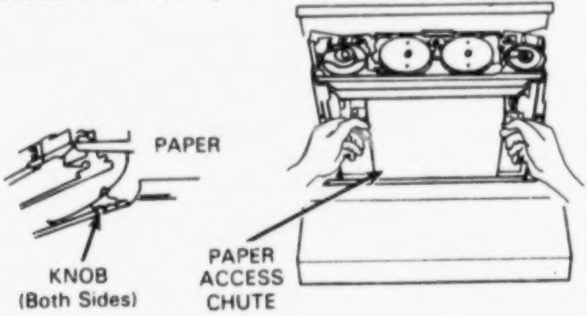


TRACTOR FEED

NOTE

If paper path is obstructed on friction feed printer for any reason, it may be necessary to raise printer and open paper access chute.

(4) To open paper access chute: Grasp knobs and snap chute down while printer is in raised position.

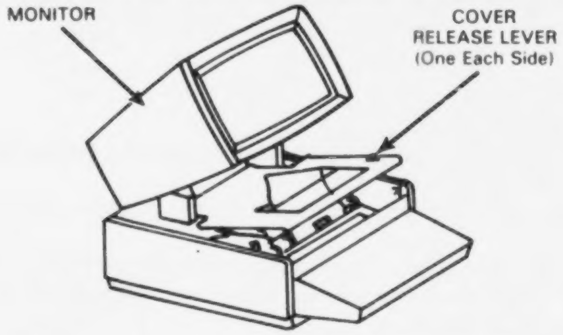


(5) To lower printer, depress both printer release levers simultaneously (printer will drop slightly). Push down on printer until release mechanism "clicks" into its normal operating position.

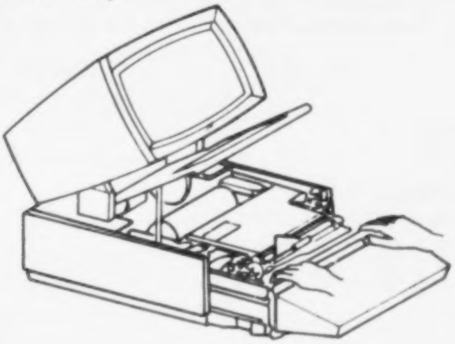
b. Friction Feed Printer Under Display Access:

(1) Turn off printer power switch.

(2) Tilt back the monitor until it reaches its stop position and open printer cover.

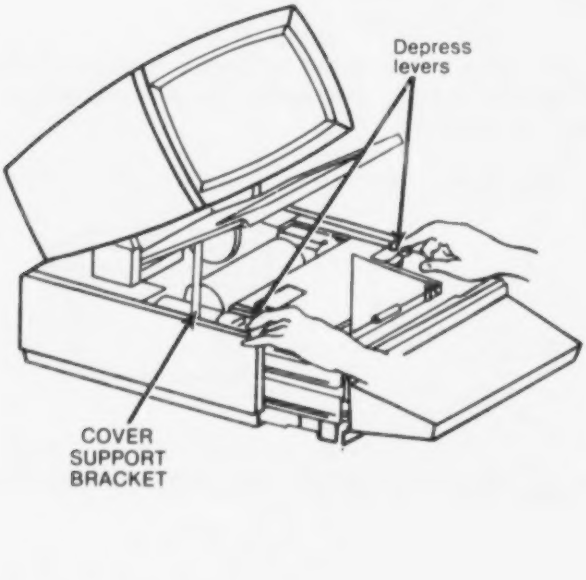


(3) Grasp front of printer housing and slide out until it "clicks" and locks in the out position. (Do not pull keyboard to slide printer out.)



(4) Follow the procedures in (Paragraph 5-4.a.) to raise printer, open paper access chute, and lower printer.

(5) Depress lever on each side of cabinet and slide printer back into cabinet.



(6) Lower cover (lift slightly and pull forward cover support bracket) until full end of paper can be fed through slot in cover. Close cover.

NOTE

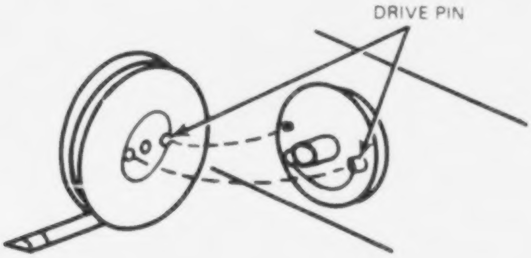
When cover locks in place the printer is also locked in place and cannot accidentally slide out.

5-5. RIBBON REPLACEMENT (FRICTION OR TRACTOR FEED).

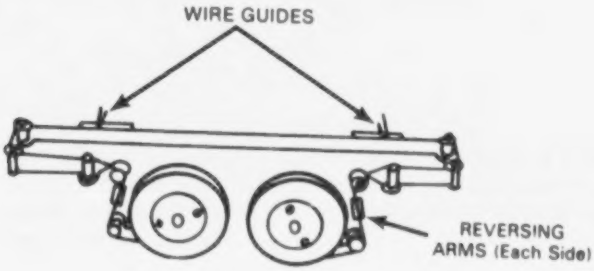
CAUTION

Teletype Corporation will not be responsible for printer damage caused by the use of improper teletypewriter ribbon. Only ribbons designated for use with Model 40 printers should be used.

a. Open printer cover and raise printer to the locked position.
b. The spools rest on nylon drive pins. Pull spools to remove. Discard old ribbon and both spools.

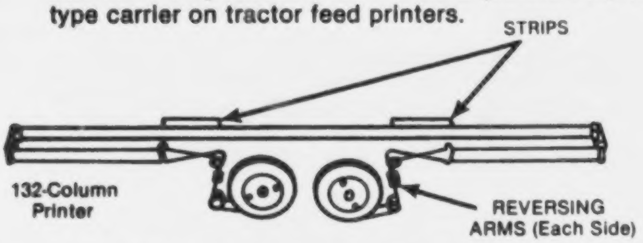


c. Rotate spindles by hand to determine which one is fixed and which turns freely. Place full spool on free-turning spindle so that ribbon feeds off bottom of spool.
d. Hold empty spool (ribbon attached) in one hand and thread ribbon as shown, being sure that:
- *(1)* Full spool is on spindle so that retaining pin and drive pin of spindle fits into small holes of spool.
- *(2)* Ribbon feeds from bottom of spool (and into bottom of other spool).
- *(3)* Eyelet is wound on empty spool and ribbon passes through reversing arms.
- *(4)* Ribbon is centered on all rollers and not caught on type pallets or wire guides.

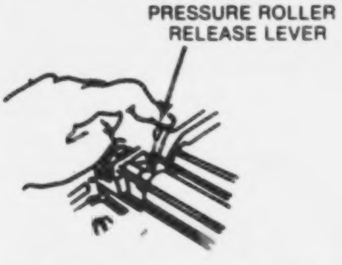


CAUTION

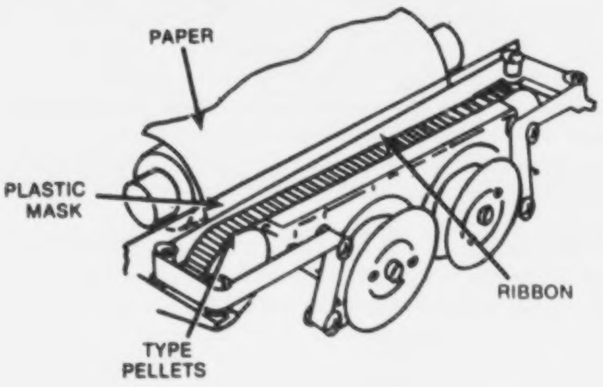
Ribbon must pass between the clear plastic strip and type carrier on tractor feed printers.



e. Place empty spool on spindle (ribbon feeding into bottom of spool).
f. Rotate full spool (free-turning spindle) by hand to take up all slack.
g. If your printer is equipped with acoustical noise reduction parts be sure that:
  (1) When loading ribbon place the pressure roller release lever in the released position.



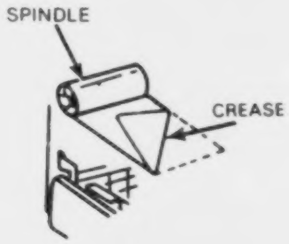
(2) The ribbon must be located between the mask and type pallets.



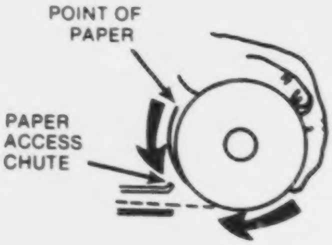
5-6. PAPER REPLACEMENT (FRICTION FEED PRINTER)

a. Open printer cover and remove empty paper roll from printer enclosure.

b. Pull pressure roller release lever up and to the front. Insert spindle in new roll; crease end of paper as shown and install paper roll into printer enclosure (do not bend or kink point of paper).



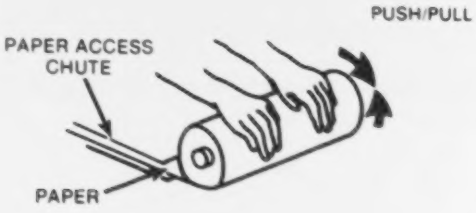
c. Back up roll until point of paper drops behind lip of paper access chute.



d. Rotate paper roll as shown to feed paper through printer.

NOTE

It will be necessary to push and pull paper roll slightly. Use both hands on paper roll for even pressure on paper.



NOTE

If paper path is obstructed for any reason, or if your printer is equipped with acoustical noise reduction parts, it will be necessary to raise printer and open paper access chute.

e. If your printer is equipped with acoustical noise reduction parts, proceed as follows:

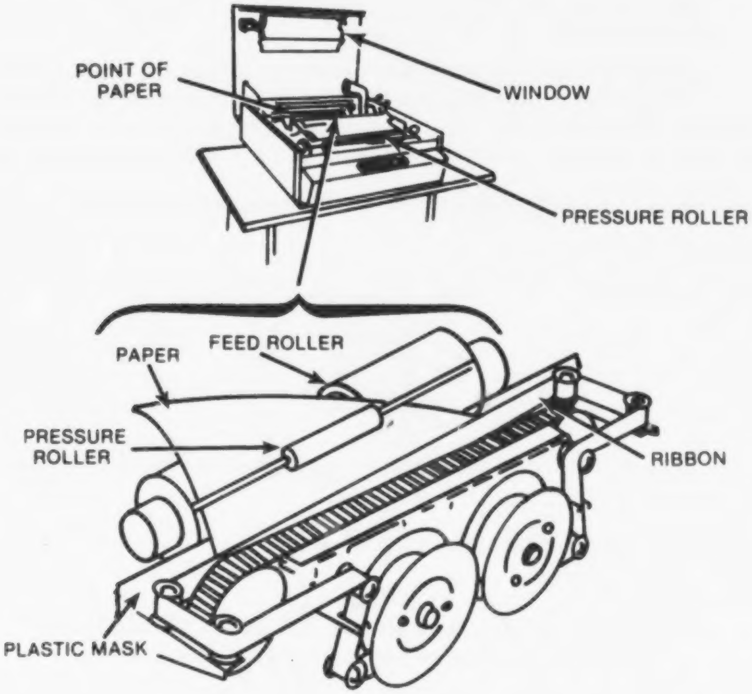
(1) With printer raised and paper access chute opened, feed paper by hand up behind the mask and between the feed roller and pressure roller.

NOTE

The mask is a plastic piece mounted between the ribbon and feed roller.

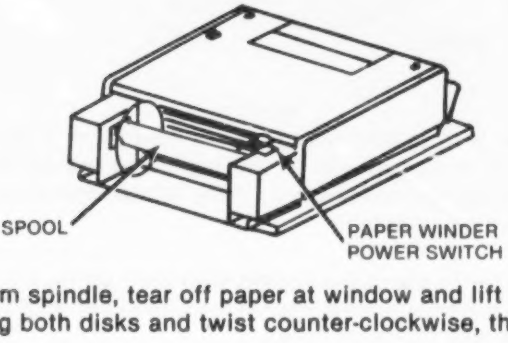
(2) Pull creased portion of paper through gap, center paper, and return pressure roller release lever to engaged position. If opened, close paper access chute and lower printer.

(3) With paper extending out, thread paper through slot in window, close cover and return monitor (if present) to its normal viewing position.



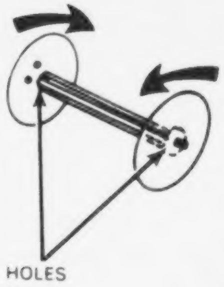
(4) If equipped with a paper winder, allow approximately 8 inches of paper between the printer and winder.

(5) With motor off, thread paper through spindle and rotate spindle to the rear to take up paper slack. Turn paper winder power switch to ON.



(6) To remove paper from spindle, tear off paper at window and lift out reel.

(7) Separate by grasping both disks and twist counter-clockwise, then pull apart.



(8) To reassemble, line up pins in holes (both ends), press together and twist clockwise to secure.

5-7. PAPER REPLACEMENT (TRACTOR FEED PRINTER)

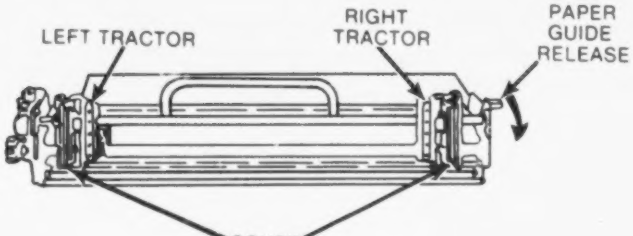
NOTE

When forms are being used and if the last message did not end in new line RETURN or FF, the next character received will not print in the first column. As an alternative, turn printer power off when replacing paper. This will assure printing in first character position of first line.

a. If forms are being used, turn on printer power and depress Form Advance button momentarily. This will assure the first line position of the form advance mechanism.

b. With printer power switch turned OFF, open cover.

c. Release paper guides and open tractor covers.



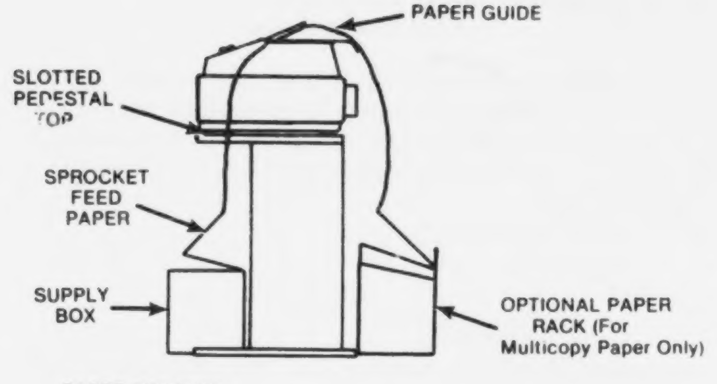
NOTE

Lift cover up slightly and push in on support bracket to close cover.

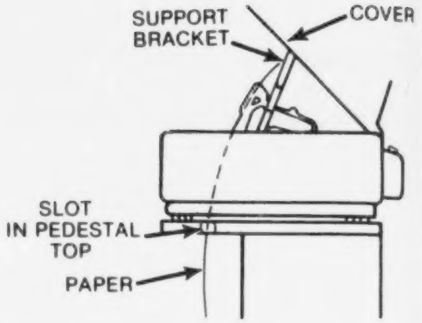
d. **Insert sprocket paper in slot under the table in front of set.**

NOTE

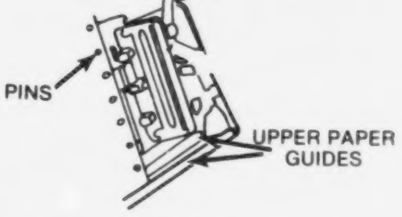
If multiple forms separate, fold one form down and insert paper. Refer to Horizontal Form Alignment (Paragraph 5-8) if paper width does not match setting of tractors.



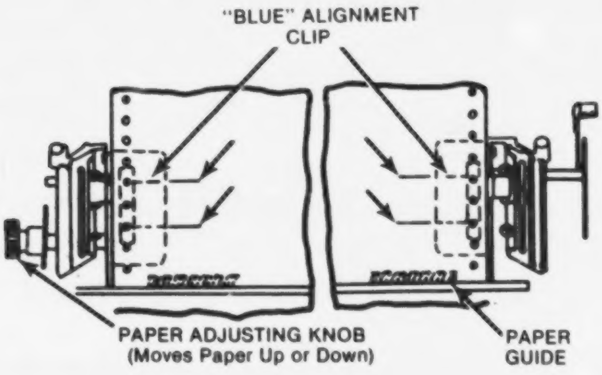
PAPER ROUTING



e. Feed paper up through printer, guide paper in back of ribbon and between upper paper guides.
f. Pull paper up and align holes on the paper with pins on the right and left tractors.



g. Close tractor cover and swing paper release back.
h. Pull out paper adjusting knob (blue) and turn to align form for first line of printing as follows:
  (1) Position paper so first line is just above paper guide.
  (2) Position top of alignment clip to any reference mark on paper (or mark with pencil).
  (3) Move paper down so reference mark aligns with bottom of clip.



i. Route form through opening in printer cover. If form is below window, close cover and depress PAPER key momentarily. This will provide adequate paper to route through cover opening.

j. Close cover, then depress FORM ADVANCE button if desired for first line printing.

5-8. HORIZONTAL FORM ALIGNMENT.

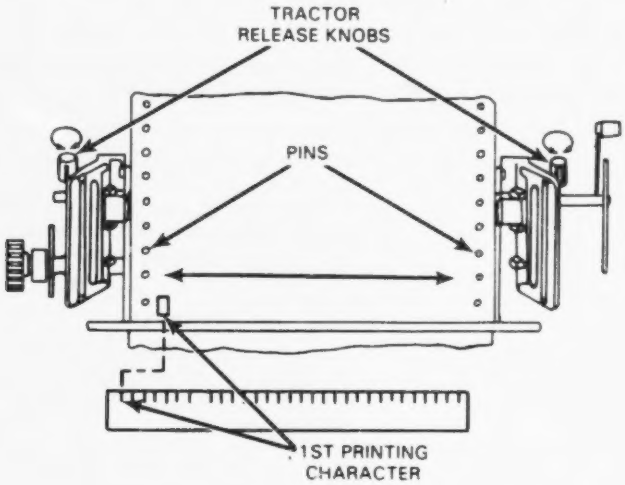
NOTE

Changing the margins or changing to a different form width will require a realignment of the left or right tractors.

a. To align the printer for a new form width:

(1) If forms are being used, operate FORM ADVANCE button momentarily before opening cover to assume first line position of mechanism.

(2) Loosen right tractor release knob and have tractor covers open.



(3) Route paper up through bottom (para. 5-7).

(4) Place paper in left-hand tractor and close tractor cover.

(5) Move right-hand tractor to align pins with holes in paper. Close tractor cover.

NOTE

Be sure paper is not under stress or wrinkled when placed between tractors.

(6) Tighten right-hand tractor release knob.

(7) Pull out paper adjusting knob and adjust to first line of form.

b. To align left-hand margin:

(1) Loosen left knob and slide tractor assembly to align first position on paper with first printing character position on scale.

(2) Route form through opening in cover.

(3) Close cover.

TABLE 5-1. OPERATOR/ORGANIZATION PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

NOTE

- If the equipment must be kept in continuous operation, check and service only those items that can be checked and serviced without disturbing operation. Make the complete checks and services when the equipment can be shut down.
- Within designated interval, these checks are to be performed in the order listed.

B-BEFORE	A-AFTER	M-MONTHLY
D-DURING	W-WEEKLY	H-2000 HOURS

* ORGANIZATIONAL ONLY

ITEM NO.	INTERVAL						ITEM TO BE INSPECTED	PROCEDURES CHECK FOR AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M	H			
1.	●						**CABINETS** Connector/cable	Connected properly and securely. Frayed pinched or crimped wires	
2.	●						Grounding Straps	Make sure all grounding straps are connected (fig. 5-2, pg. 5-13)	
3.	●		●	●	●		External Surface	a. Free of dirt, grease, corrosion and fungus b. Immersion type cleaning is NOT recommended for Tempest Model 40 Cabinets, Pedestals, Paper Winders, or Facilities. **CAUTION** Avoid the use of harsh or abrasive cleaning agents or solvents which could scratch or damage exterior plastic or painted surfaces.	
4.		●					Interlock	Test operation of interlock switch as applicable; pull up on switch plunger and apply power, then lower plunger. Motor should stop.	
5.	●						Mechanical	a. Check all doors and panels for proper opening and closing without binds or interferences and for proper alignment. b. Check all latches, hinges, interlock switches, etc. for proper alignment of mating surfaces. c. Check all slides, guides, and mounting surfaces for proper alignment and configuration. d. Check for the presence and proper condition of all feet, bumpers, and padding. All padding should adhere and conform to cabinet interior surfaces.	

CAUTION

DURING SERVICING OR PRIOR TO OPERATIONAL CHECKOUT, MAKE SURE ALL GROUNDING STRAPS ARE CONNECTED.

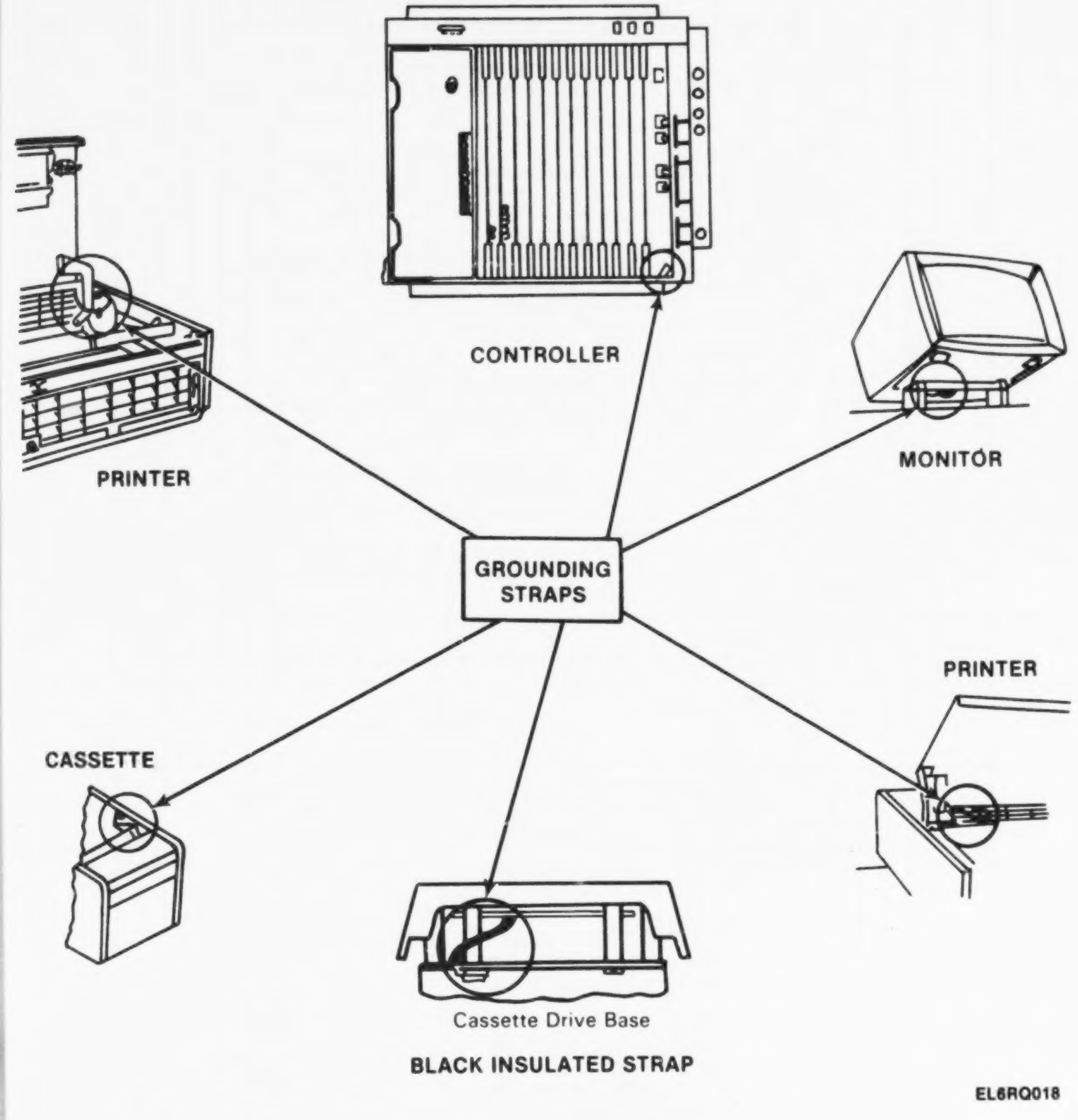


Figure 5-2. Grounding Strap Location

TABLE 5-1. OPERATOR/ORGANIZATION (PMCS) (CONTINUED)

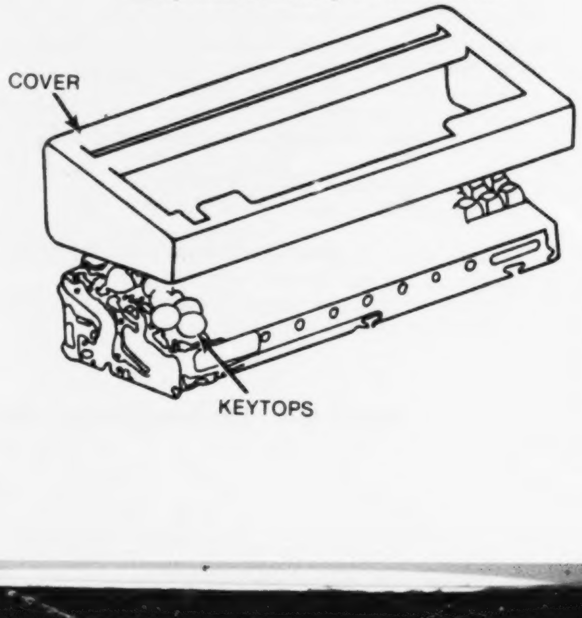
ITEM NO.	INTERVAL						ITEM TO BE INSPECTED	PROCEDURES CHECK FOR AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M	H			
								e. Check fan assemblies for free rotation, no binding, wobble or eccentricity. f. Check that two spindles of paper spool are mated and that spool is seated properly and engages with drive clutch	
*6.						●	Lubrication	**NOTE** ● Lubrication of this equipment is a Direct Support procedure which must be performed only by a qualified teletypewriter repairman. ● Organizational personnel should refer to the following chart and alert the Direct Support unit when lubrication is required.	
7.						●	**CONTROLLER** Cleaning	**CAUTION** Do not use tank or immersion type cleaning processes on the wired frame. a. Remove dust accumulation from exterior surface. b. Remove obstructions to proper air ventilation. c. Use damp cloth, mild detergent solution followed by buffing dry with soft cloth.	
8.	●						**OPCON** Mechanical	Check that there are no loose keys.	
*9.						●	Lubrication	**NOTE** Never lubricate the keyswitch assemblies.	
10.						●	Cleaning	a. Cover (removed from OPCON) wash with mild detergent solution. Rinse with damp cloth. Buff dry with soft cloth. 	

TABLE 5-1. OPERATOR/ORGANIZATION (PMCS) (CONTINUED)

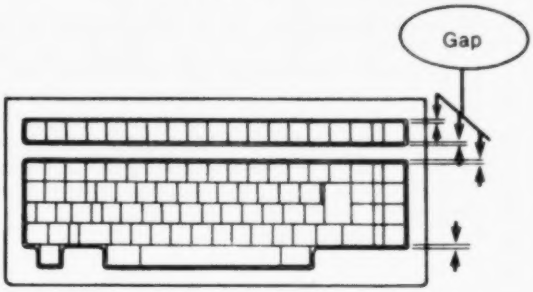
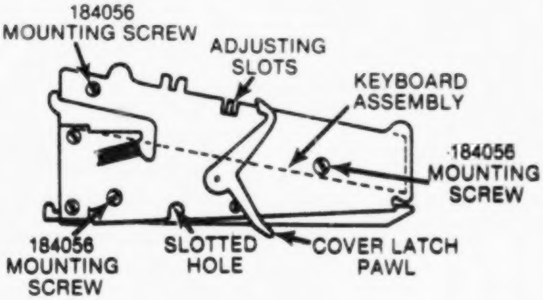
ITEM NO.	INTERVAL						ITEM TO BE INSPECTED	PROCEDURES CHECK FOR AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M	H			
*11.	●						**OPCON** (CONT) Adjustment	**NOTE** Clearance between cover and keytop should be equal. 	
								a. To adjust: Remove cover and loosen three mounting screws friction tight on both sides of console.  184056 MOUNTING SCREW ADJUSTING SLOTS KEYBOARD ASSEMBLY 184056 MOUNTING SCREW 184056 MOUNTING SCREW SLOTTED HOLE COVER LATCH PAWL	
								b. Insert screwdriver blade into slot and move keyboard assembly forward or to the rear to gain "gap" clearance. Tighten screws, replace cover and check gaps. If the gaps are not approximately equal after reassembly, remove cover and repeat the adjustment.	
							MONITOR	WARNING Turn off the power and signal sources before removing or replacing any component. ● Wear approved safety glasses when the housing of the monitor is removed, as the display tube is fragile in the neck area and is subject to implosion if broken. Be careful not to strike the glass of the tube with tools or components when working in its vicinity.	

TABLE 5-1. OPERATION/ORGANIZATION (PMCS) (CONTINUED)

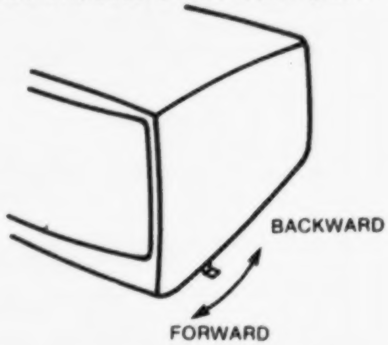
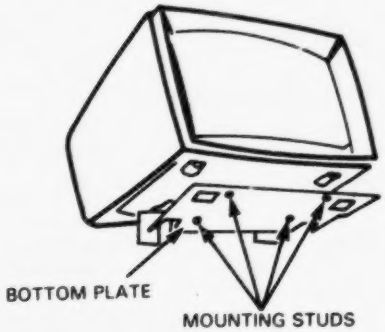
ITEM NO.	INTERVAL						ITEM TO BE INSPECTED	PROCEDURES CHECK FOR AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M	H			
								CAUTION Be careful when working in area of CRT. Keep sharp objects, that could scratch tube, out of way.	
12.	●						Mechanical	a. Check tube tilt control for proper detenting throughout the entire range of tilt, so that the tube will remain positioned at any desired tilt angle in the range. Move adjusting lever to the right to disengage from rack teeth. Move lever forward or backward to obtain desired position. Release lever to lock in place.  b. Examine the face of the display tube for chips, scratches, or severe discolorations. c. Check that housing, bottom plate, and support bracket shields are not cracked, severely scratched, discolored, etc. d. Verify that all four studs associated with bottom plate are present and not broken or mutilated. e. Check for excessive buildup of dust. f. Ventilating slots are clear.  	

TABLE 5-1. OPERATOR/ORGANIZATION (PMCS) (CONTINUED)

ITEM NO.	INTERVAL						ITEM TO BE INSPECTED	PROCEDURES CHECK FOR AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M	H			
13.						●	Cleaning	**CAUTION** Avoid the use of harsh or abrasive cleaning agents or solvents which could scratch or damage the exterior plastic surfaces of the monitor housing or the face of the cathode ray tube (CRT) or CRT mask. a. Clean all ventilating screens using a soft bristled brush to remove debris. b. Wash exterior with a mild detergent solution and rinse with a damp cloth. Buff dry with a soft cloth.	
14.	●						**PRINTER** Mechanical	a. Check tractors for: 1. Deformities 2. Free operation 3. No pins missing 4. Amber drive belts for mutilation b. Motor and fan working properly	
*15.						●	Lubrication	See item 6.	
16.						●	Cleaning	a. Remove ink, grease, and fungus from case with a dampened cloth (not wet) with freon, TF. b. Gain access to printer (Para. 5-4). c. Tractor Printer 1. Use soft bristled brush to remove dust and foreign material from: (a) Left tractor (b) Right tractor (c) Paper release (d) Knob (e) Shaft (f) Type carrier track (g) Print hammers (tops) (h) Ribbon mechanism and surrounding area 2. Use cloth moistened with mineral spirits and wipe the following areas of the paper handling assembly as required. Wipe dry with a clean cloth. (a) Left tractor (b) Right tractor (c) Paper release (d) Knob (e) Shaft (f) Type carrier track (g) Print hammers (tops) (h) Ribbon mechanism and surrounding area	

TABLE 5-1. OPERATOR/ORGANIZATION (PMCS) (CONTINUED)

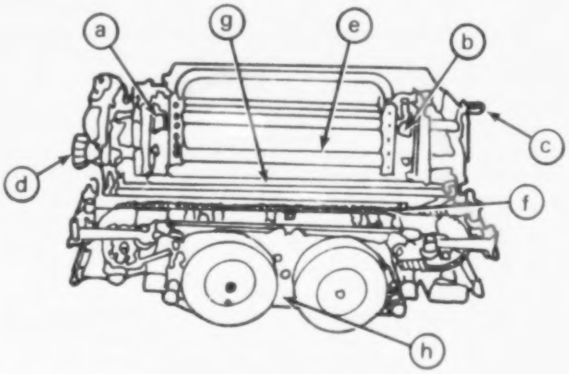
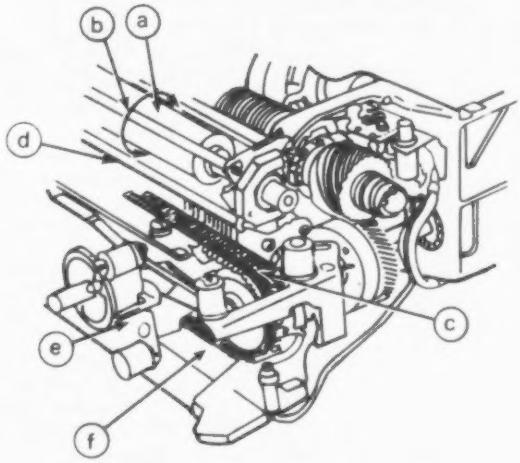
ITEM NO.	INTERVAL B	D	A	W	M	H	ITEM TO BE INSPECTED	PROCEDURES CHECK FOR AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	EQUIPMENT IS NOT READY/ AVAILABLE IF:
								 d. Friction Printer 1. Use soft bristled brush to remove any dust or foreign material from the items below: (a) Paper roller and surrounding area (b) Paper pressure roller (c) Type carrier track (d) Print hammers (tops) (e) Ribbon mechanism and surrounding area (f) Paper guide throat and roller 	

TABLE 5-1. OPERATOR/ORGANIZATION (PMCS) (CONTINUED)

ITEM NO.	INTERVAL						ITEM TO BE INSPECTED	PROCEDURES CHECK FOR AND HAVE REPAIRED OR ADJUSTED AS NECESSARY	EQUIPMENT IS NOT READY/ AVAILABLE IF:
	B	D	A	W	M	H			
								2. Use cloth, moistened with mineral spirits and wipe the above areas of the paper handling assembly as required. Wipe dry with a clean cloth.	
17.						●	Ribbon	Replace after 25 hours of operation if worn. (See para. 5-5.)	
18.	●						Replace Paper	a. Friction feed (para. 5-6) b. Tractor feed (para. 5-7)	
*19.						●	**CASSETTE** Lubrication	See item 6.	
20.	●						Mechanical	a. Cassette tape can be inserted and removed without any binding. b. Cassette door operates without binding.	
21.					●		Cleaning	a. Using recording head cleaner and a cotton swab, the tape head, hub drivers, and cassette locating pins should be cleaned each week or sooner if dirt or oxide deposits are detected on the hub drivers and locating pins. b. Mating surfaces of the armature and the rotor faces. Place a small piece of paper between the armature and the rotor faces of each clutch assembly; apply pressure to each face; withdraw paper from between the armature and rotor. Repeat for each pole face until the withdrawn paper is clean. c. The tape cleaner should be replaced once at every service interval, after normal usage. Under heavy usage, it should be replaced twice between service intervals. (fig. 6-1, pg. 6-3) **NOTE** Normal usage of the cassette drive is defined as 1 hour/day tape in motion operation, i.e., writing, reading, searching, or rewinding, and 7 hour/day at idle in data ready mode, 5 days/week.	
*22.							Heads	**NOTE** Read/write head assembly should be replaced after 500 hours of tape in motion operation or 4,000 hours normal operation. This is a direct support function; only qualified technicians should replace the heads.	

CHAPTER 6
ORGANIZATION MAINTENANCE

SECTION I. GENERAL

6-1. SCOPE OF ORGANIZATION MAINTENANCE.

a. This chapter contains instructions covering organizational maintenance for Tempest Model 40/8B Data Terminal. It incudes instructions for performing preventive and periodic maintenance services, removal and replacement of subassemblies. Operating instructions are in chapter four of this manual.

b. Organization maintenance of the Tempest Model 40/8B Data Terminal includes all the preventive maintenance services described in Table 5-1, in addition to:

(1) Operational Checks (Chapter 7)
(2) Troubleshooting (Chapter 7)
(3) Removal and replacement subassemblies listed in section II of this chapter

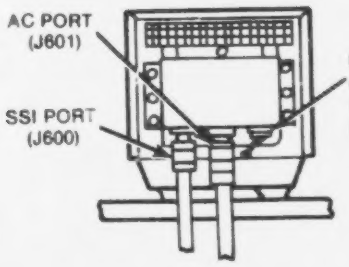
6-2. TOOLS AND ORGANIZATIONAL MATERIALS. The tools and materials required to perform organizational maintenance are listed in para. 5-2.

SECTION II. PREVENTIVE MAINTENANCE CHECKS AND SERVICE

6-3. MAINTENANCE PROCEDURES.

a. Carry out the cleaning, operation and maintenance requirements in Table 5-1.
b. Perform the following maintenance checks and services in addition to those in the operator's portion of the manual:
  (1) Refer to Chapter 7 for Operational Checks and Troubleshooting Procedures.
  (2) Below are the procedures to remove and replace the following subassemblies:
    (a) Cassette Drive Unit:
      1. Disconnect connectors at the AC port (J601) and SSI port (J600).
      2. Install new drive unit.
      3. Reverse the hook up procedures on the replacement cassette drive unit.

CASSETTE DRIVE



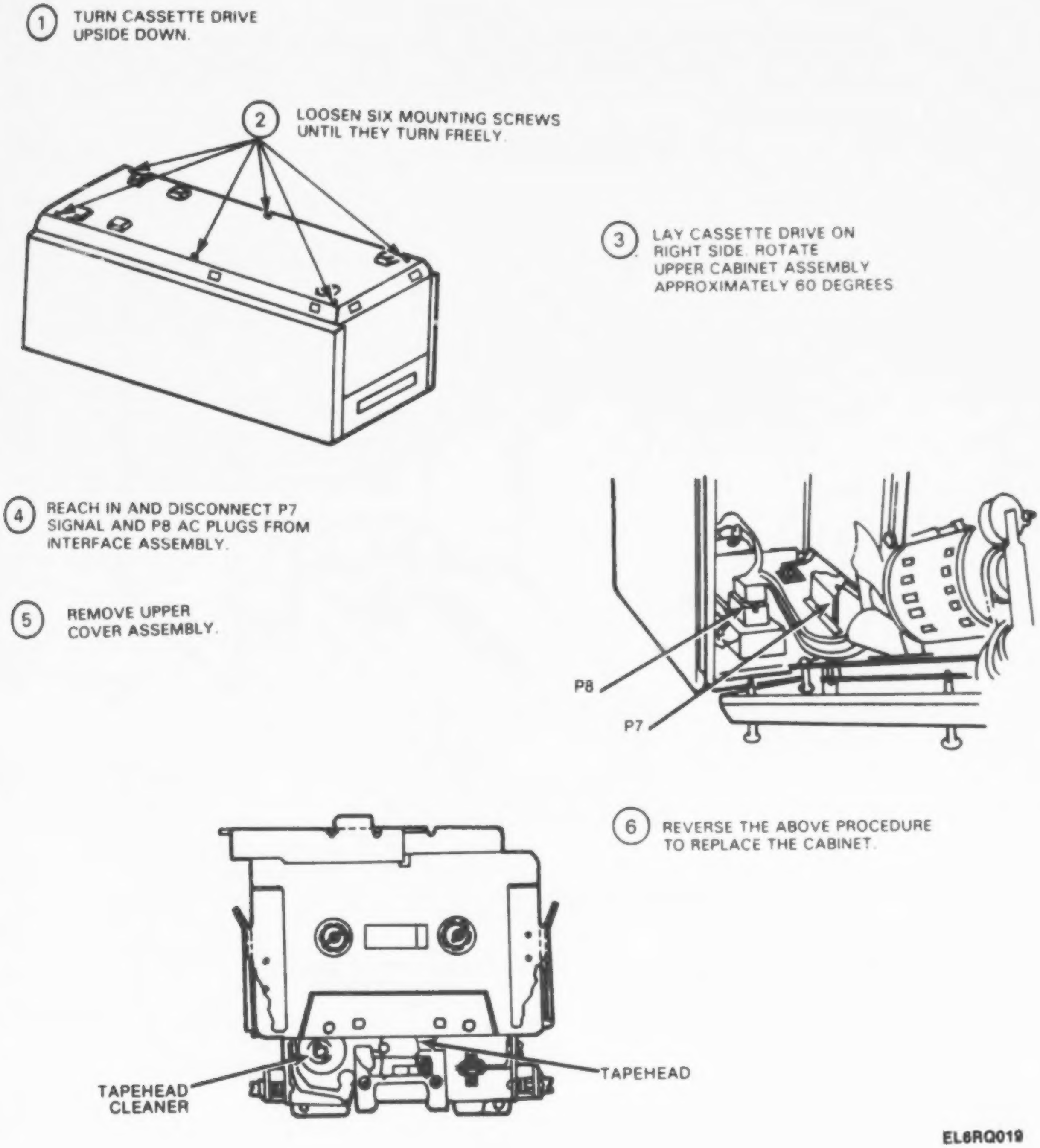
Make sure power circuit breaker switch is in OFF position.

    (b) Cassette Drive Cabinet: (fig. 6-1, pg. 6-3)
    (c) Controller: (fig. 6-2, pg. 6-4)
    (d) Display Monitor: (fig. 6-3, pg. 6-5)
    (e) Operator Console: (fig. 6-4, pg. 6-6)
    (f) Tractor Feed Printer: (fig. 6-5, pg. 6-7)
    (g) Form Belt: (fig. 6-6, pg. 6-8)
      1. Loosen yellow thrumbscrew (counterclockwise) and slide bracket forward to remove tension.
      2. Depress and hold form selector lever so that contact arm clears.
      3. Move rear (idler) wheel forward.
      4. Remove belt by sliding it to the left.

5. Depress and hold form selector lever while holding rear idler wheel forward.
6. Position new belt on wheels so that arrow points inward.
7. Position rear wheel back and remove slack in belt. Have bracket at right angles to slot as shown above.
8. Tighten thumbscrew clockwise.
9. Depress FORM ADVANCE and check the stop positions.

(h) Friction Feed Printer: (fig. 6-7, pg. 6-9)

6-4. EQUIPMENT PERFORMANCE CHECK LIST. Follow the operational checkout as instructed in Chapter 7. Perform the checks in the sequence listed. If the corrective measures do not remove the trouble, higher category of maintenance is required.



① TURN CASSETTE DRIVE UPSIDE DOWN.

② LOOSEN SIX MOUNTING SCREWS UNTIL THEY TURN FREELY.

③ LAY CASSETTE DRIVE ON RIGHT SIDE. ROTATE UPPER CABINET ASSEMBLY APPROXIMATELY 60 DEGREES

④ REACH IN AND DISCONNECT P7 SIGNAL AND P8 AC PLUGS FROM INTERFACE ASSEMBLY.

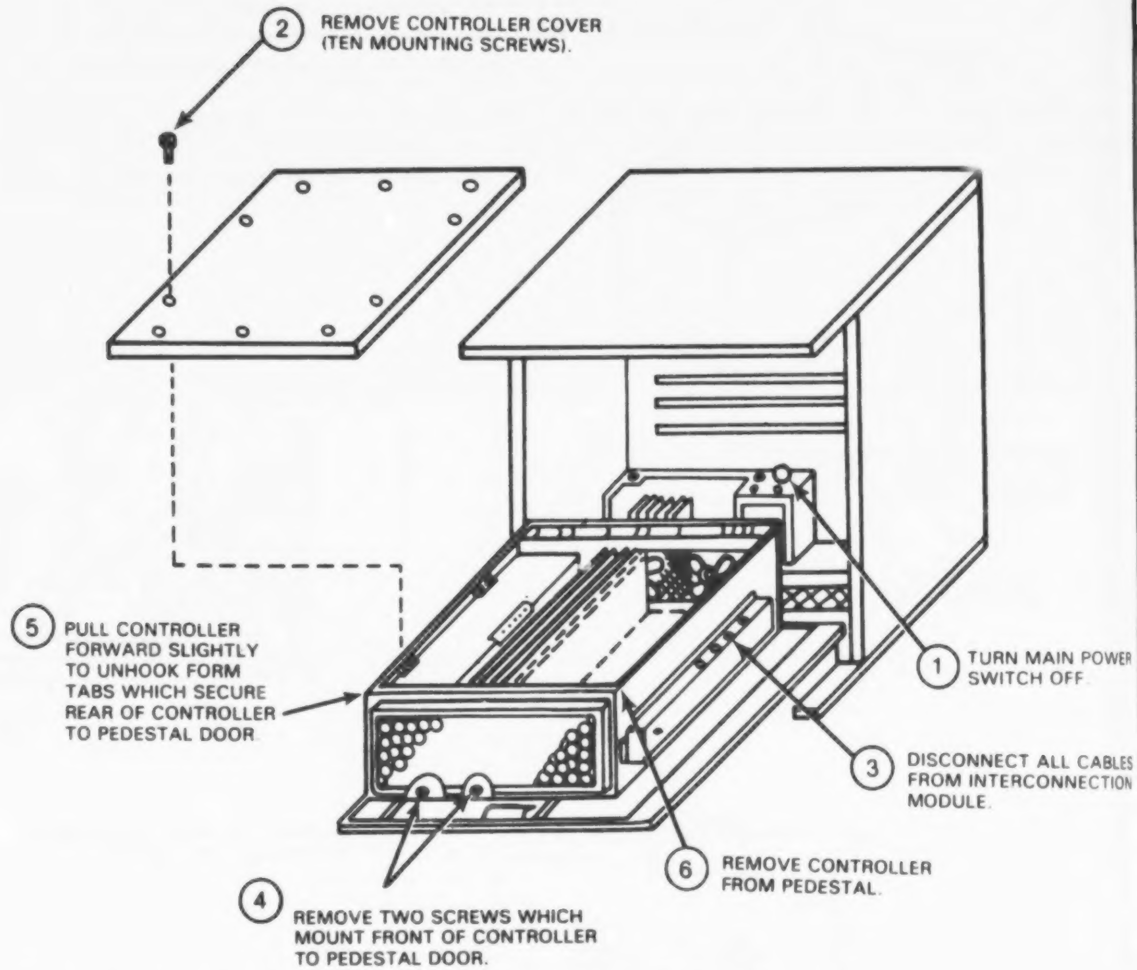
⑤ REMOVE UPPER COVER ASSEMBLY.

⑥ REVERSE THE ABOVE PROCEDURE TO REPLACE THE CABINET.

Figure 6-1. Cassette Drive Cabinet Removal

NOTE

ON LATE MODEL COVERS, THE MOUNTING SCREWS ARE RETAINED IN THE COVER. LOOSEN THE SCREWS.



① TURN MAIN POWER SWITCH OFF.

② REMOVE CONTROLLER COVER (TEN MOUNTING SCREWS).

③ DISCONNECT ALL CABLES FROM INTERCONNECTION MODULE.

④ REMOVE TWO SCREWS WHICH MOUNT FRONT OF CONTROLLER TO PEDESTAL DOOR.

⑤ PULL CONTROLLER FORWARD SLIGHTLY TO UNHOOK FORM TABS WHICH SECURE REAR OF CONTROLLER TO PEDESTAL DOOR.

⑥ REMOVE CONTROLLER FROM PEDESTAL.

⑦ TO INSTALL CONTROLLER IN PEDESTAL REVERSE REMOVAL PROCEDURES.

EL6RQ020

Figure 6-2. Controller Removal

CAUTION

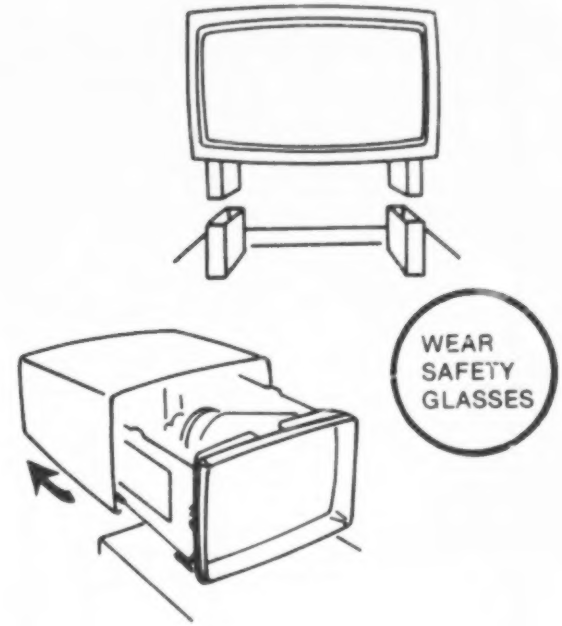
REMOVE ALL POWER FROM THE SET BEFORE PERFORMING ANY COMPONENT REPLACEMENT OR CONVERSIONS. THIS DOES NOT APPLY TO COVER REMOVAL ACCESS TO TEST SWITCHES, OR TO POWER ON ADJUSTMENTS OF THE MONITOR.

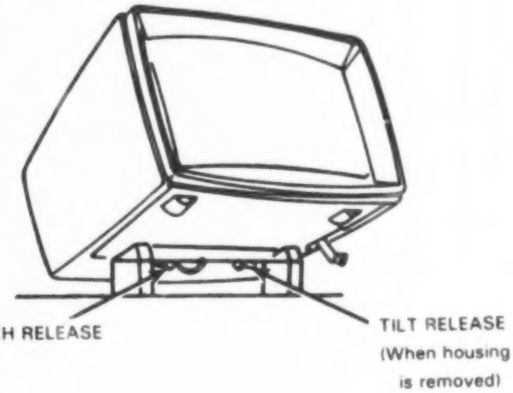
REMOVAL

1 Removal of entire monitor unit from set:
Grasp monitor by sides near supports and simply lift up. Electrical cable connectors are part of support assembly.

2 Removal of monitor housing:
Tilt monitor back and disengage latch. Slide housing back partially. Position monitor to its normal position making sure it locks in that position. Remove housing completely.

3 Reverse the above procedures to replace the monitor unit.





EL6RQ021

Figure 6-3. Display Monitor Removal

CAUTION

CHECK THAT OPCON IS FIRMLY ATTACHED ON BOTH SIDES BEFORE RELEASING HOLD.

REMOVAL

① Place thumb on inward tab of left latch and press downward to unlatched position.

② Hold opcon firmly with left hand. With right hand place thumb on right latch tab and press downward to unlatched position.

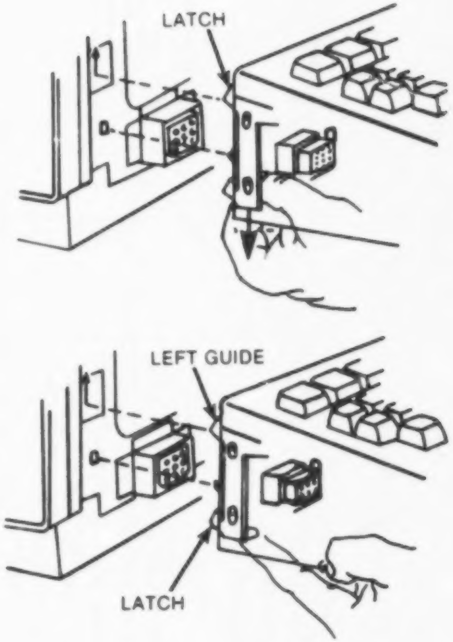
③ Carefully pull opcon forward to disengage from cabinet.

REPLACEMENT

① Slide left and right latches down.

② Engage connectors and left and right guides into the slots.

③ Slide left and right latches upward to latched position.

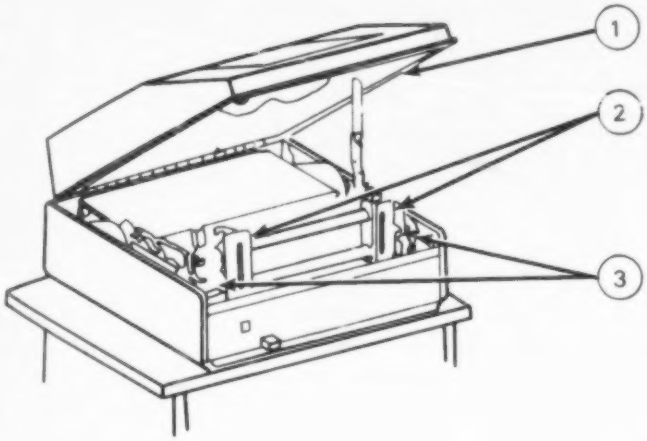


EL6RQ022

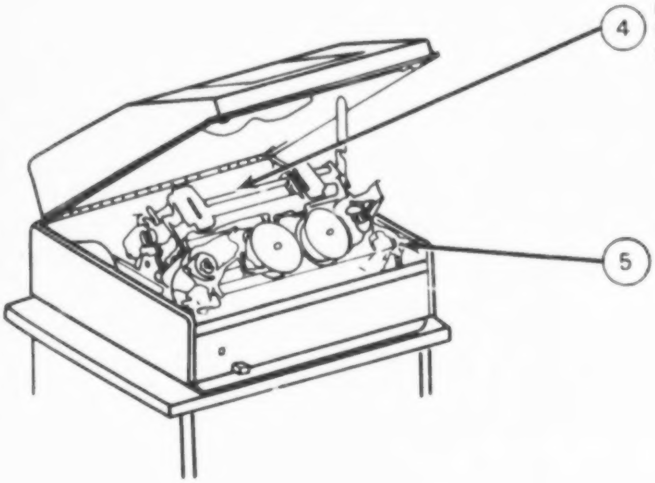
Figure 6-4. Operator Console Removal

NOTE

PROCEDURES FOR 80- AND 132-COLUMNS ARE SIMILAR. PRINTER SHOWN IS 80-COLUMN.



1. OPEN COVER.
2. REMOVE PAPER BY RELEASING PAPER GUIDE AND OPENING FORMS TRACTORS.
3. RELEASE PRINTER TO TILT POSITION BY PRESSING LEFT AND RIGHT LATCHLEVERS TO PAPER.



4. PULL PRINTER FORWARD BY GRASPING HANDLE AT TOP, AND SLIDE OFF MOUNTING TRACKS.
5. INSERT SCREWDRIVER IN RIGHT MOUNTING TRACK AND PRY UP DETENT.
6. TO INSTALL PRINTER, REVERSE THE ABOVE PROCEDURE.

EL6RQ023

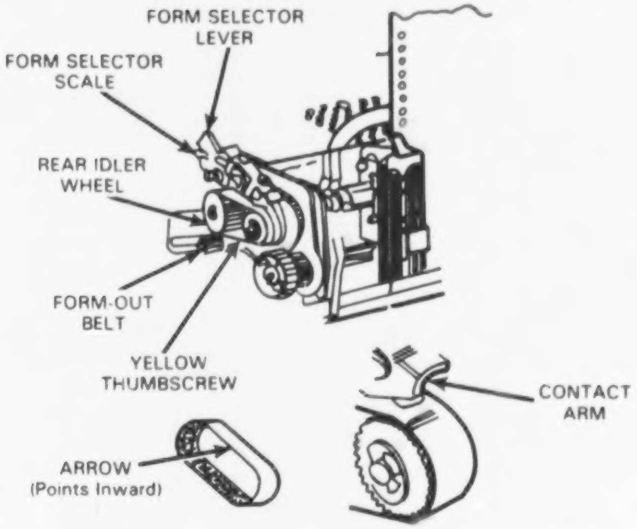
Figure 6-5. Tractor Feed Printer Removal

NOTE

IF FORM STOP POSITIONS DO NOT CORRESPOND TO THE FORM LENGTHS, THE BELT MAY BE REVERSED OR THE INCORRECT BELT USED. CHECK BELT AND FORM LENGTH TABLE.

Form Selector Setting				Color of Belt	Teletype Part Number
4	3	2	1		
Form Lengths (Inches)					
3-1/3‡	2-1/2	5	10	Amber	*402571
3-2/3‡	2-3/4†	5-1/2	11	Blue	*402572
4	3	6	12	Yellow	*402573
4-1/3‡	3-1/4†	6-1/2	13	Brown	402574
4-2/3‡	3-1/2	7	14	Red	*402575
5	3-3/4†	7-1/2	15	Pink	402576
5-1/3‡	4	8	16	Lt Green	*402577
5-2/3‡	4-1/4†	8-1/2	17	Green	402578
6	4-1/2	9	18	Lt Blue	402579
7-1/3‡	5-1/2	11	22	White	402580

†Not operable on 6 to the inch line spacing printers.
‡Not operable on 8 to the inch line spacing printers.



EL6RQ024

Figure 6-6. Form Belt Removal

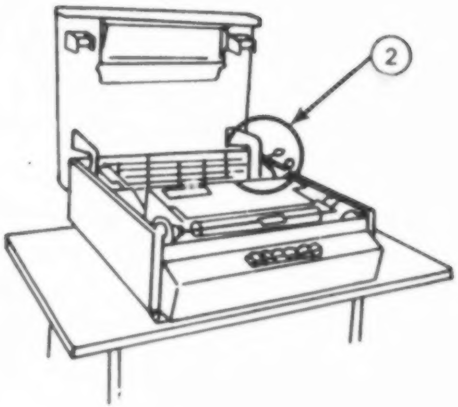
NOTE

THE 410640 CIRCUIT CARD CAN BE REMOVED WHEN PRINTER IS IN MAINTENANCE (TILT) POSITION.

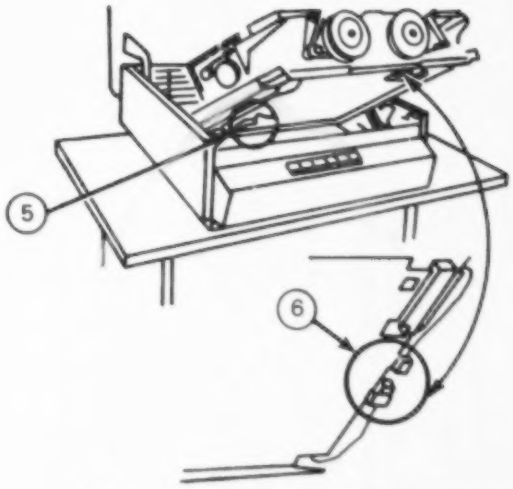
① OPEN COVER.

② DISCONNECT P106 INTERLOCK CABLE CONNECTOR.

③ REMOVE PAPER ROLL.



④ RELEASE PRINTER TO TILT POSITION BY DEPRESSING LEFT AND RIGHT RELEASE LEVERS.



⑤ DISCONNECT 115V AC J100 CONNECTOR.

⑥ DISCONNECT SSI CABLE FROM PRINTER CABLE.

⑦ RELEASE (PUSH IN) PRINTER SLIDE DETENTS AND PULL PRINTER OUT BY GRASPING IT BY THE FRAME (FRONT BOTTOM).

⑧ TO INSTALL PRINTER REVERSE REMOVAL PROCEDURES.

EL6RQ025

Figure 6-7. Friction Feed Printer Removal

CHAPTER 7
TROUBLESHOOTING PROCEDURES

7-1. THE TROUBLESHOOTING INTRODUCTION

a. Table 7-1 lists the common malfunctions which you may find during the operation or maintenance of the Tempest Model 40/8B Data Terminal. You should perform the tests/inspections and corrective actions in the order listed.

b. This manual cannot cover all the troubles that may occur, nor all tests or inspections and corrective actions. If a trouble is not listed or cannot be corrected by doing the corrective actions, notify your supervisor.

c. Cassette Drive Check Out Procedure is described in Para. 4-2.b.

7-2. HOW TO USE TROUBLESHOOTING CHART (Table 7-1). The numbered columns represents the malfunctions. The second identure represents the test or inspection and the third indenture lists the corrective action to be taken.

TABLE 7-1. TROUBLESHOOTING

MALFUNCTION
  TEST OR INSPECTION
    CORRECTIVE ACTION

---

1. TERMINAL COMPLETELY INOPERATIVE.
  Check to see that all AC power cords are connected and power switches are on.
    Connect all AC power cords and turn power switches on.

CAUTION

Wear approved safety glasses when the monitor housing is removed, as the display tube is fragile in the neck area and is subject to implosion if broken. Be careful not to strike the tube with tools or components when working in its vicinity.

2. RASTER DOES NOT APPEAR ON DISPLAY MONITOR WITH BRIGHTNESS CONTROL TO FULL INTENSITY (CCW).
  Check to see that I (7) Pilot Lamp, I (3) unregulated 130V, and I (4) unregulated 65V, are lit.
    Replace Monitor.

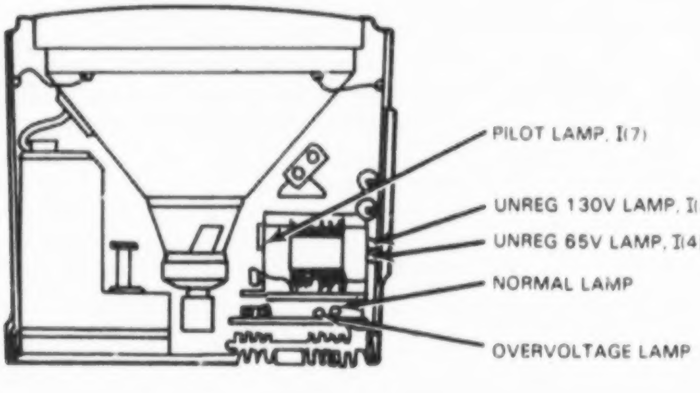


TABLE 7-1. TROUBLESHOOTING (CONTINUED)

MALFUNCTION
TEST OR INSPECTION
CORRECTIVE ACTION

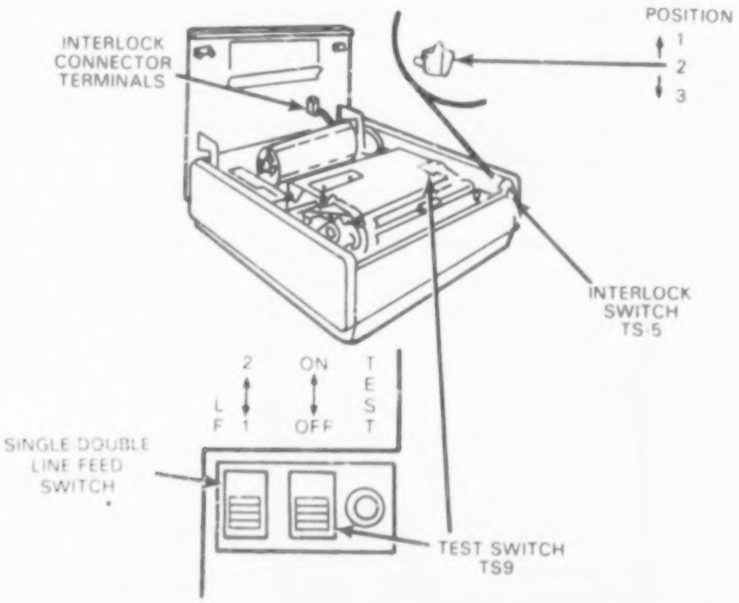
3. THE CURSOR IS NOT DISPLAYED ON DISPLAY MONITOR WHEN A TEST MESSAGE HAS BEEN INPUTTED ENDING WITH EOT (END OF TEXT).
    - Step 1. Depress HOME KEY; cursor should move to start of first line.
    - Step 2. Test Controller (Table 7-2).
        - Replace Controller.

4. CHARACTERS SHOWN ON DISPLAY MONITOR ARE DISTORTED.
    - Test Controller (Table 7-2).
        - Replace Controller.

5. TERMINAL DOES NOT RESPOND CORRECTLY TO COMMANDS ENTERED ON THE DISPLAY MONITOR IN THE CONTROL MODE.
    - Step 1. Test Cassette Drive (Para. 4-2.b.)
        - Replace Cassette Drive.
    - Step 2. Test Controller (Table 7-2).
        - Replace Controller.

6. IN THE KEYBOARD DISPLAY MODE, DATA (INCLUDING EDITING FUNCTIONS) CANNOT BE ENTERED FROM THE OPCON TO THE DISPLAY MONITOR ON ALL SEGMENTS.
    - Test Controller (Table 7-2).
        - Replace Controller.

7. TYPE CARRIER SYMBOL ($\equiv\frac{A}{A}\equiv$ OR $\equiv\frac{A}{8}\equiv$) DOES NOT PRINT IN EVERY COLUMN WHEN PRINTER TEST SWITCH (TS9) IS ON AND PRINTER COVER IS CLOSED, OR (TS5) INTERLOCK SWITCH IS IN MAINTENANCE POSITION.



EL6RQ026

Figure 7-1. Switch Panel

TABLE 7-1. TROUBLESHOOTING (CONTINUED)

MALFUNCTION
    TEST OR INSPECTION
        CORRECTIVE ACTION

8. CASSETTE DO NOT RESPOND IN LOCAL OR ON LINE OPERATION.
    Step 1. Test Cassette Drive (Para. 4-2.b.).
        Replace Cassette Drive.
    Step 2. Test Controller (Table 7-2).
        Replace Controller.

9. DEPRESSING ANY KEY DOES NOT GENERATE CHARACTERS ON DISPLAY MONITOR WITH SET IN KEYBOARD DISPLAY MODE.
    Step 1. Check for loose or defective cable from controller to OPCON.
        Replace cable.
    Step 2. Test Controller (Table 7-2).
        Replace Controller.

10. A SINGLE CHARACTER APPEARS ON THE MONITOR OR PRINTER WHEN POWER IS FIRST TURNED ON.
    Step 1. Check mechanical operation of keyswitch.
    Step 2. Test OPCON (Table 7-4).
        Replace OPCON.

NOTE

Prior to applying AC to the controller, insure that power is on to tape cassette drive and the cassette is in the unlatched (cassettes disengaged) position.

7-3. OPERATIONAL VERIFICATION. When the trouble has been corrected, the terminal should be checked to be sure it is operating properly (Table 7-4).

TABLE 7-2. CONTROLLER TEST PROCEDURES

CAUTION

To avoid possible internal damage to circuitry, wear a 346392 static discharge strap connected to ground to allow static discharge before handling circuit cards for removal or replacement. Avoid touching circuit lands and card components as much as possible.

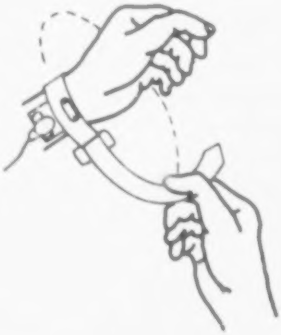
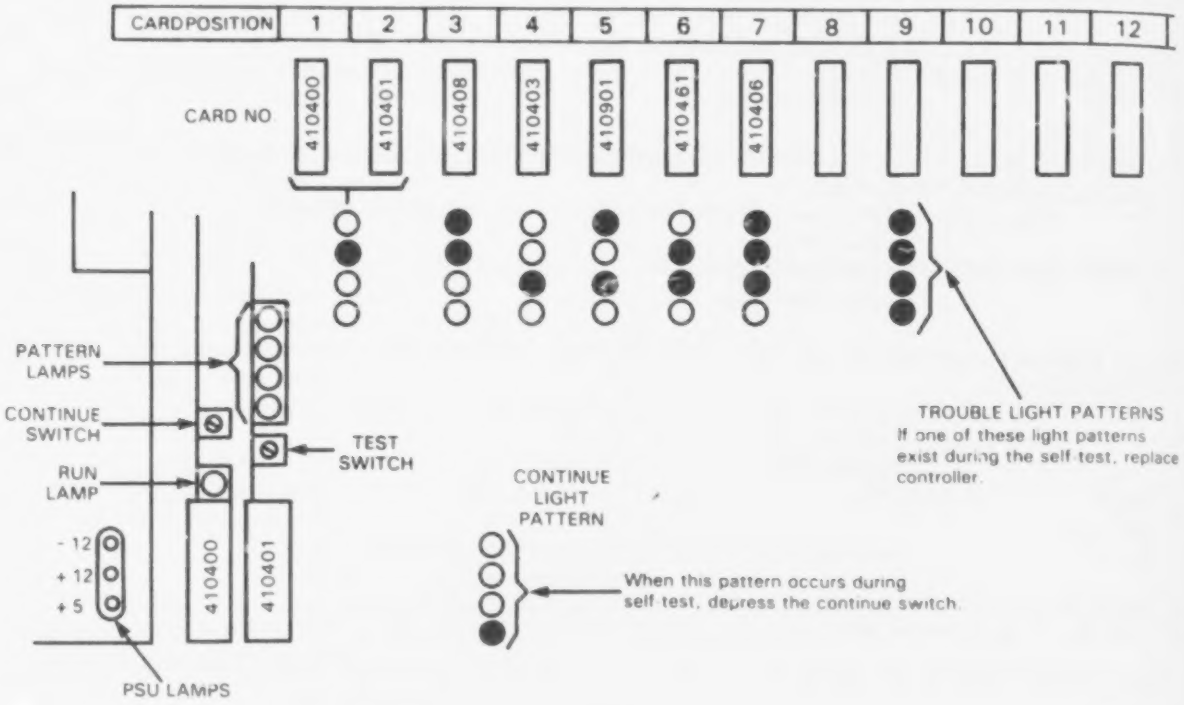


TABLE 7-2. CONTROLLER TEST PROCEDURES (CONTINUED)

SAMPLE CONTROLLER ARRANGEMENT FORM



CARD POSITION	1	2	3	4	5	6	7	8	9	10	11	12
CARD NO.	410400	410401	410408	410403	410901	410461	410406					

If one of these light patterns exist during the self-test, replace controller.

When this pattern occurs during self-test, depress the continue switch.

NOTE

Some arrangements have more than one continue light pattern.

STEP	PROCEDURE	CORRECT RESPONSE
1.	Apply power to controller.	All PSU voltage lamps indicate. Run lamps indicate.
2.	Depress and hold test switch.	All pattern lamps indicate.
3.	Release test switch.	If continue pattern exists depress continue switch. After 1-2 minutes, pattern lights blink sequentially. Pattern lamps should extinguish (approximately 15 seconds).
4.	Check the monitor.	The display pattern corresponding to 41043 circuit card used. Sample displays follow.

TABLE 7-2. CONTROLLER TEST PROCEDURES (CONTINUED)

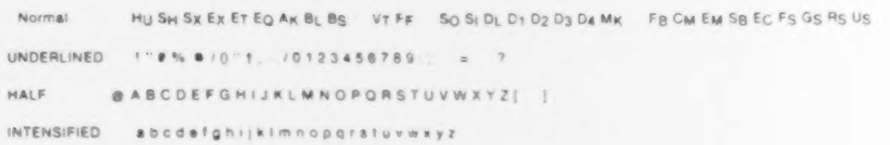
STEP	PROCEDURE	CORRECT RESPONSE
	 Normal HU SH SX EX ET EQ AK BL BS VT FF SO SI DL D1 D2 D3 D4 MK FB CM EM SB EC FS GS RS US UNDERLINED ! " # % ● / 0 " 1 . / 0 1 2 3 4 5 6 7 8 9 . = ? HALF @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ ] INTENSIFIED a b c d e f g h i j k l m n o p q r s t u v w x y z Display Pattern for a 410437 D I/O Circuit Card	
5.	To return Controller to normal operating mode, push continue switch.	Keyboard is unlocked. Cursor in home position on monitor.

TABLE 7-3. PRINTER TEST PROCEDURE

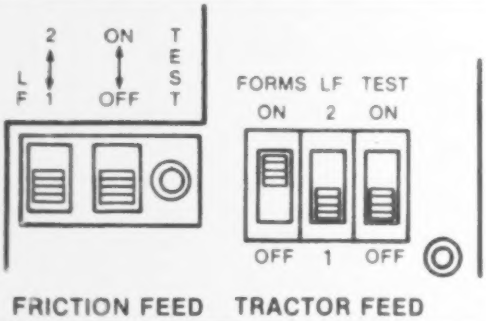
STEP	PROCEDURE	RESULT
1.	Ribbon and paper should be loaded. The switches (top right of printer, cabinet cover raised) should be placed in the following positions: LF -- 1 Test -- Off Forms (tractor feed only) -- On	 2 ON TEST LF 1 OFF FORMS LF TEST ON 2 ON OFF 1 OFF FRICTION FEED TRACTOR FEED
2.	Momentarily depress PAPER button (red) on printer cabinet cover.	Paper feeds out as long as button is depressed.
3.	TRACTOR FEED PRINTER ONLY Depress and release FORM ADVANCE button (black) on printer cabinet cover.	Paper feeds out until first line of next form is reached, then stops.
4.	Unlatch and raise printer cabinet cover.	
5.	Raise cover Interlock switch to maintain position.	

TABLE 7-3. PRINTER TEST PROCEDURE (CONTINUED)

STEP	PROCEDURE	RESULT
6.	Set TEST switch to ON, allow printer to print several lines, then turn Test switch OFF.	Printer turns on and prints font identification symbol ▆$\frac{\wedge}{A}$▆ or ▆$\frac{\wedge}{8}$▆ repeatedly until switch is turned OFF.
7.	TRACTOR FEED PRINTER ONLY Tear off next form under pedestal top, then depress PAPER button on printer cabinet cover until last form passes through printer. Reload forms, guide first form through window, and close cabinet cover.	PAPER lamp lights. PAPER lamp extinguishes.
8.	FRICTION FEED PRINTER Lift paper roll to simulate a paper alarm. Lower paper roll, guide paper through window, and close cabinet cover.	LOW PAPER 1amp lights. LOW PAPER 1amp extinguishes.
9.	KDP SET ONLY Place a line of Es on top and bottom lines of display. Depress PRINT LOCAL and while cursor is moving through third or fourth line depress PRINT LOCAL again.	PRINT LOCAL lamp lights. Cursor moves through line of E's at top of display, returns to left, and moves through lines of spaces (blank lines). Printer prints line of E's. **NOTE** ● Printing may occur in all 80 character positions or some E's may be carried over to next line, depending on Option 17. ● Printer line feeds but does not print for each line of spaces. ● When PRINT LOCAL is depressed again, PRINT LOCAL lamp extinguishes and printer stops. ● Printer may or may not feed out 16 lines of paper before turning off, depending on Option 18.

TABLE 7-3. PRINTER TEST PROCEDURE (CONTINUED)

STEP	PROCEDURE	RESULT
10.	ROP SET ONLY Depress TEST key.	TEST key locks in down position and lights. TERM READY lamp extinguishes. Printer starts printing U"U" pattern if ITA5 code was programmed or RYRY pattern if ITA2 code was programmed. Printer will continue to print pattern until TEST key is depressed again.
11.	Depress TEST key again.	TEST key unlatches, lamp extinguishes. Printer stops printing and turns off. TERM READY lamp lights.

TABLE 7-4. OFF LINE OPERATIONAL CHECKOUT

NOTE

Immediately when power is turned on, the POLL/SEL and MON Tape (if monitor is present) lamps will light. PTR line lamp will light after approximately 14 seconds.

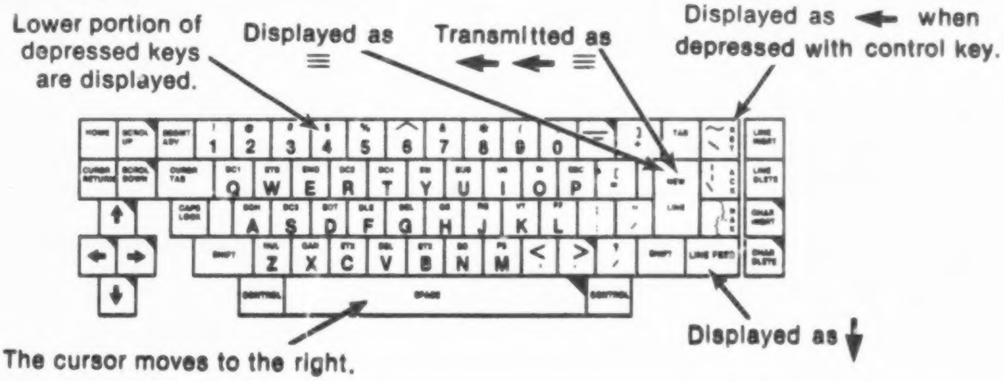
STEP	PROCEDURE	RESULTS
1.	a. Depress LINE FEED and ["'] simultaneously with additional force and then release.	TEST CLEAR lamp lights (brightly) and remains lit, indicating loopback test mode is activated and power is being supplied to OPCON. **NOTE** Occassionally, the operational lamps may flash on and then off, when loopback test mode is activated. If this occurs, clear the test by depressing LINE FEED and ESC P beyond their normal stop, and re-enter test mode.

TABLE 7-4. OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE	RESULTS
1. (cont.)	b. Place OPCON into the caps mode by depressing and latching CAPS LOCK. c. Depress the following keys while observing lamps for proper indication.	

Depress Keys	Function	Lamp Condition
A	DISP LINE	ON
CONTROL and A (SOH)	DISP LINE	OFF
C	DISP LCL	ON
CONTROL and C (ETX)	DISP LCL	OFF
D	DISP SEND	ON
CONTROL and D (EOT)	DISP SEND	OFF
G	PTR LINE	ON
CONTROL and G (BEL)	PTR LINE	OFF
F	PTR LCL	ON
CONTROL and ACK	PTR LCL	OFF
E	SEND TAPE LINE	ON
CONTROL and E (ENO)	SEND TAPE LINE	OFF
B	SEND TAPE LCL	ON
CONTROL and B (STX)	SEND TAPE LCL	OFF
J	REC TAPE LINE	ON
NEW LINE	REC TAPE LINE	OFF
O	REC TAPE LCL	ON
CONTROL and O (SI)	REC TAPE LCL	OFF
N	MON TAPE	ON
CONTROL and N (SO)	MON TAPE	OFF
M	POLL/SEL	ON
LINE FEED	POLL/SEL	OFF
L	CNTRL MODE	ON
CONTROL and L (FF)	CNTRL MODE	OFF
K	FORM SEND	ON
CONTROL and K (VT)	FORM SEND	OFF
I	HIGH LIGHT	ON
TAB	HIGH LIGHT	OFF
H	FORM ENTER	ON
← (Cursor Left)	FORM ENTER	OFF
→ (Cursor Right)	DISP LCL	≡FLASH≡
CONTROL and C (ETX)	DISP LCL	OFF
CURSOR RETRN	PTR LINE	≡FLASH≡
CONTROL and G (BEL)	PTR LINE	OFF
↓ (Cursor Down)	SEND TAPE LCL	≡FLASH≡
CONTROL and B (STX)	SEND TAPE LCL	OFF
CLEAR	REC TAPE LINE	≡FLASH≡
NEW LINE	REC TAPE LINE	OFF
LINE DELETE	POLL/SEL	≡FLASH≡

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

<table>
<tr><th>STEP</th><th>PROCEDURE</th><th>RESULTS</th></tr>
<tr><td>1.c.
(cont.)</td><td colspan="2"><table>
<tr><th>Depress Keys</th><th>Function</th><th>Lamp Condition</th></tr>
<tr><td>LINE FEED</td><td>POLL/SEL</td><td>OFF</td></tr>
<tr><td>LINE INSRT</td><td>CONTRL MODE</td><td>≡FLASH≡</td></tr>
<tr><td>CONTROL and L (FF)</td><td>CONTRL MODE</td><td>OFF</td></tr>
<tr><td>HOME</td><td>FORM ENTER</td><td>≡FLASH≡</td></tr>
<tr><td>← (Cursor Left)</td><td>FORM ENTER</td><td>OFF</td></tr>
</table></td></tr>
<tr><td></td><td>d. Depress LINE FEED and ESC P simultaneously with additional force, and then release.</td><td>TEST CLEAR lamp extinguishes and returns OPCON to normal operating mode.</td></tr>
<tr><td>2.</td><td colspan="2">Home the cursor. Ensure that DISP LINE, DISP LCL, DISP SEND lamps are out. Then depress each key on the keyboard portion of the OPCON four or five times. Check monitor for character.


Lower portion of depressed keys are displayed.
Displayed as ≡
Transmitted as ← ← ≡
Displayed as ← when depressed with control key.
The cursor moves to the right.
Displayed as ↓

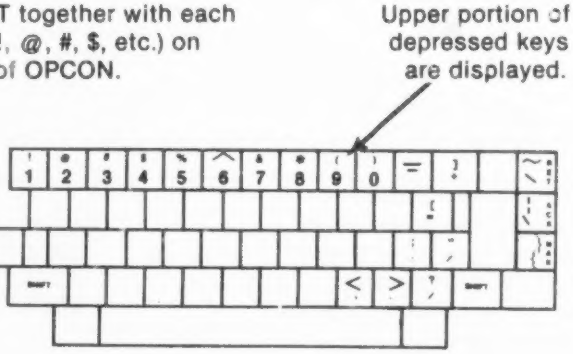
</td></tr>
<tr><td>3.</td><td>Disengage CAPS LOCK by depressing it again momentarily. Again depress each key on keyboard portion of OPCON four or five times.</td><td>Alpha characters displayed in lower case (ie, abcdef, etc.).</td></tr>
<tr><td>4.</td><td>Depress left SHIFT together with each nonalpha key (ie, !, @, #, $, etc.) on keyboard portion of OPCON.</td><td>
 </td></tr>
</table>

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

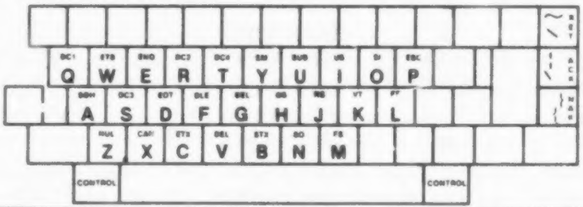
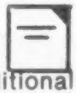
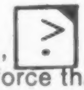
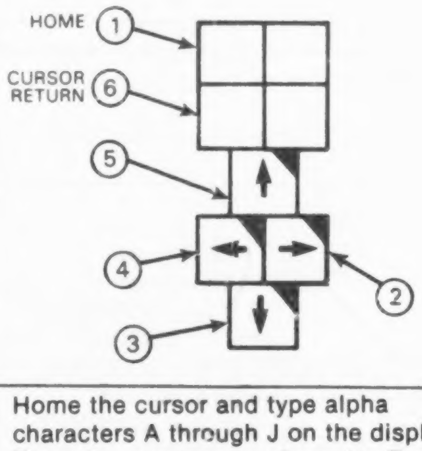
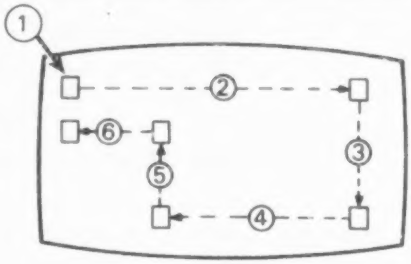
STEP	PROCEDURE	RESULTS
5.	Depress right SHIFT together with one of the keys depressed in Step 4.	The character on upper portion of depressed key is displayed.
6.	Depress left CONTROL together with keys containing control characters four or five times each.  Q W E R T Y U I O P A S D F G H J K L Z X C V B N M CONTROL CONTROL	
7.	Depress right CONTROL together with one of the keys depressed in Step 6.	The corresponding control character is displayed.
8.	Depress  ,  and SPACE with additional force than is normally required.	.... The SPACE key repeatedly moves the cursor.
9.	Depress HOME. Then, in sequence, depress each cursor movement key shown momentarily, with more force than is normally required.  	
10.	Home the cursor and type alpha characters A through J on the display. Place the cursor over character E and depress CHAR INSRT momentarily; then depress it fully -- releasing it after characters stop moving.	ABCDEFGHIJ□ ABCD$\boxed{E}$FGHIJ ABCD□ EFGHIJ ABCD□ EFGHIJ

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE	RESULTS
11.	Depress CHAR DLETE momentarily; then depress it fully.	ABCD☐ EFGHIJ ABCD☐ EFGHIJ ABCD$\boxed{E}$FGHIJ ABCD$\boxed{F}$GHIJ ABCD$\boxed{G}$HIJ
12.	Depress LINE INSRT once.	Cursor moves to beginning of line, and the line of data moves down one line.
13.	Depress LINE DLETE once; then depress CLEAR.	The line of data move up, and then display is cleared of all characters.
14.	Place the cursor away from home position and depress CURSOR TAB.	Cursor moves to first character position of next line (unformatted display).
15.	Place the cursor away from home position and depress TAB.	Cursor moves to first character position of next line (unformatted display). Tab symbol appears (►).
16.	Depress HOME and numeric 1.	Numeric 1 is displayed in home position.
17.	Depress NEW LINE 24 times.	Cursor moves down display, displaying new line character at 1st position of each line. On the 24th depression of NEW LINE, the numeric 1 will disappear from display.
18.	Type a numeric 2 and depress NEW LINE 24 times.	The numeric 2 will move up one line each time NEW LINE is depressed. On the 24th depression of the NEW LINE, the numeric 2 will disappear from screen.
19.	Type a numeric 3.	A numeric 3 is displayed.
20.	Depress HOME.	The cursor moves to the home position and a "1" is displayed under the cursor.
21.	Depress SEGMT ADV.	Cursor does not move. A "2" is displayed under cursor.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

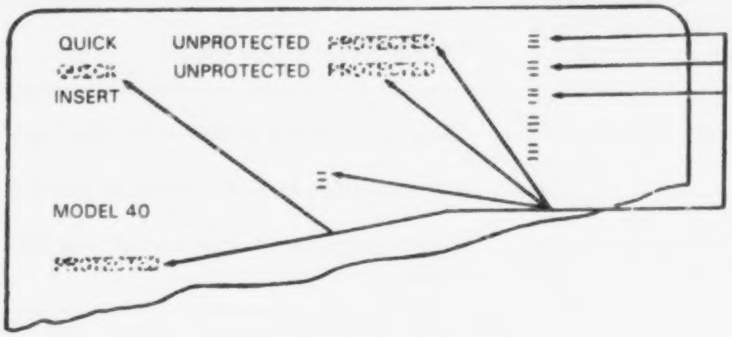
STEP	PROCEDURE	RESULTS
22.	Depress SEGMT ADV again.	The cursor does not move and the "2" is replaced by the "3" under the cursor.
23.	Depress SEGMT ADV again.	The cursor does not move. The "3" is replaced by the "1" under the cursor.
24.	Depress SCROL UP once.	The "1" disappears from the display and the "2" appears at bottom left of display.
25.	Depress SCROL UP fully.	The "2" and the "3" move up the display. Scrolling stops when the "3" reaches top of display.
26.	Depress SCROL DOWN once, then fully.	The "3" moves down one line, then moves down continuously and disappears as the "2" appears at top of display. Scrolling continues until the "1" appears at top of display.
27.	Depress SEGMT ADV twice.	First the "2" then the "3" appear at top of display.
28.	Position cursor by means of the ↓ and ← to next to the last line of display. Type some U's on this line.	Cursor moves under direction of cursor control key. U's are displayed.
29.	Depress LINE INSRT once.	The U's move to last line of display. The cursor moves to the 1st character position of the line next to last line of display.
30.	Depress LINE INSRT several times.	Display does not change.
31.	Home cursor and depress TAB CLEAR.	All tabs (on all segments) are cleared.
32.	Depress HIGH LIGHT.	HIGH LIGHT lamp lights.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE	RESULTS
33.	Enter a full line of asterisks at top of display.	Asterisks are displayed as intensified. Alarm sounds at 73rd and 80th character positions. Cursor remains at right end of line. **NOTE** If option X1 is installed, the cursor will wrap to the beginning of the next line.
34.	Depress HIGH LIGHT again.	HIGH LIGHT lamp extinguishes.
35.	Depress LINE INSRT.	Cursor moves to left margin, and highlighted asterisks move down one line.
36.	Depress FORM ENTER.	FORM ENTER lamp lights.
37.	Enter a full line of U's at top of display.	U's are displayed at half-intensity. Alarm sounds at 80th character position. Cursor remains at right end of line. See Note in Step 33.
38.	Depress LINE INSRT.	Cursor moves to left margin and lines of asterisks and U's both move down one position. Cursor remains in home position.
39.	Depress CLEAR.	Screen is cleared.
40.	Depress FORM ENTER.	FORM ENTER lamp extinguishes.
41.	Enter message in lines 1 through 9 of display. **(See Pgs 7-14 and 15.)**	To observe protected spaces, increase monitor brightness, and note that all protected data has darker background than unprotected data.

TABLE 7-4 OFF LINE CHECKOUT PROCEDURES (CONTINUED)

STEP	PROCEDURE	RESULT
42.	Depress CHAR INSRT fully and hold until movement stops.	Word QUICK in line 1 moves to tab c umn and stops. No other characters fected.
43.	Depress CHAR DLETE twice.	Word QUICK in line 1 moves to tab c umn and stops. No other characters fected.
44.	Depress TAB.	Cursor moves to tab column. Tab symbol (▶) appears at origin position of cursor. All characters passed over by cursor a erased from display.



Protected data displayed at half-intensity.

NOTE
Depress each key once unless number of depressions is indicated in parentheses.

LINE 1

Type QUICK
Depress SPACE (5)
Depress TAB SET
Type UNPROTECTED
Depress SPACE (2)
Depress FORM ENTER
Type PROTECTED
Depress FORM ENTER
Depress SPACE (8)
Depress FORM ENTER
Depress NEW LINE

LINE 2

Type QUICK
Depress FORM ENTER
Depress SPACE (3)
Type UNPROTECTED
Depress SPACE (2)
Depress FORM ENTER
Type PROTECTED
Depress FORM ENTER
Depress SPACE (8)
Depress FORM ENTER
Depress NEW LINE
Depress FORM ENTER

LINE 3

Type INSERT
Depress SPACE until cursor is one character to the left of new line symbol in line 2.
Depress FORM ENTER
Depress NEW LINE
Depress FORM ENTER

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE		RESULTS
	LINES 4 and 5 Depress Cursor Right (→) until cursor is under new line symbol. Depress NEW LINE (Repeat for line 5)	LINE 6 Depress Cursor Right (→) until cursor is at about 23rd character position. Depress FORM ENTER Depress NEW LINE Depress FORM ENTER	LINE 7 Type MODEL Depress SPACE Type 40
	LINE 8 Depress CURSR RETRN Depress Cursor Down (↓) twice.	LINE 9 Depress FORM ENTER Type PROTECTED Depress FORM ENTER Depress HOME	NOTE Procede with step 42.
45.	Depress CHAR INSRT fully and hold until movement stops.		Word UNPROTECTED moves two positions to right. No other characters affected.
46.	Depress CHAR DLETE fully and hold until movement stops.		Word UNPROTECTED is moved left and completely erased. No other characters affected.
47.	Depress TAB.		Cursor moves to second character position after word PROTECTED. Tab symbol (►) appears at original position of cursor.
48.	Depress Space once, then depress it fully.		Cursor moves to character position preceding protected new line symbol. Alarm sounds continuously, and cursor does not advance beyond this position.

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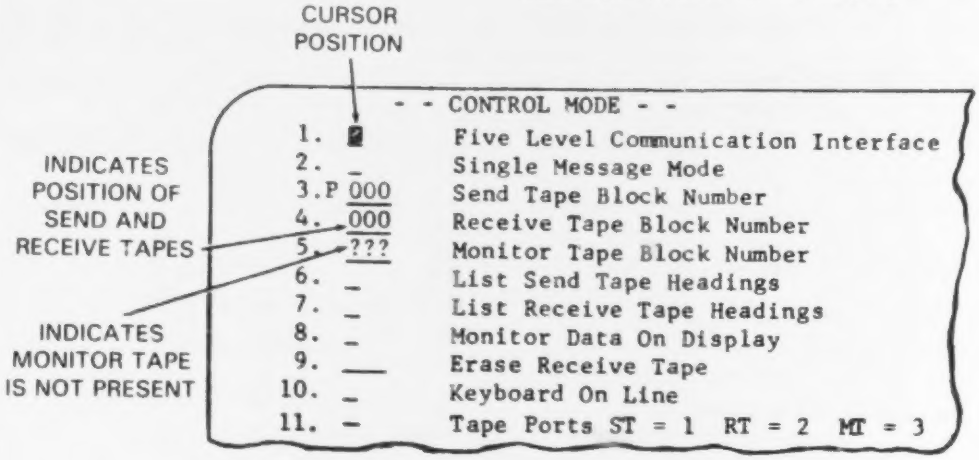
TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE	RESULTS
49.	Depress TAB.	Cursor moves to second space after protected word QUICK in line 2.
50.	Depress CURSR TAB.	Cursor moves to tab mark.
	Depress CURSR TAB.	Cursor moves to the second space following word PROTECTED.
	Depress CURSR TAB.	Cursor moves to beginning of word INSERT in line 3. No characters altered in any way.
51.	Depress LINE INSRT three times.	Word INSERT does not move. Rest of display does not change.
52.	Position cursor over M in word MODEL, then depress LINE INSRT twice.	Words MODEL 40 move down one position and stops.
53.	Move cursor over P at beginning of line 9, and type some miscellaneous characters.	Alarm sounds each time a key is depressed.. (No characters can overwrite a protected character. Cursor moves one character space with each key depression.)
54.	Depress HOME, CLEAR, then TAB CLEAR.	Cursor goes to home position. All unprotected characters and tab columns are cleared. Protected characters remain on display.
55.	Depress FORM ENTER.	FORM ENTER lamp lights.
56.	Depress CLEAR.	All characters are cleared from display.
57.	Depress FORM ENTER.	FORM ENTER lamp extinguishes.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE	RESULTS
58.	Depress CONTROL MODE keytop.	CONTROL MODE lamp lights and the following message appears on the display.


CURSOR POSITION
INDICATES POSITION OF SEND AND RECEIVE TAPES
INDICATES MONITOR TAPE IS NOT PRESENT

```
                    - - CONTROL MODE - -
 1.  █          Five Level Communication Interface
 2.  _          Single Message Mode
 3.P 000        Send Tape Block Number
 4.  000        Receive Tape Block Number
 5.  ???        Monitor Tape Block Number
 6.  _          List Send Tape Headings
 7.  _          List Receive Tape Headings
 8.  _          Monitor Data On Display
 9.  ___        Erase Receive Tape
10.  _          Keyboard On Line
11.  -          Tape Ports ST = 1  RT = 2  MT = 3
```

Number indicates cassette drive assigned for that function.

ST = Send Tape

RT = Receive Tape

MT = Monitor Tape

0 will appear if no cassette drive is available for that function.

NOTE

If a cassette drive is not present ??? will appear in the block number for that cassette.

For KD sets, *Place in Service*.

For KDPM2 and KDPM3 sets, go to Step 67.

KDP LOCAL CHECKOUT

STEP	PROCEDURE	RESULTS
59.	Using cursor positioning keys:	Cursor moves under direction of cursor control key.
	(1) position cursor to the first underline to the right of 2.	
	(2) Type an upper case X.	X appears, cursor moves one space to the right.
	(3) Depress LINE FEED key.	X remains, cursor returns to its original position.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

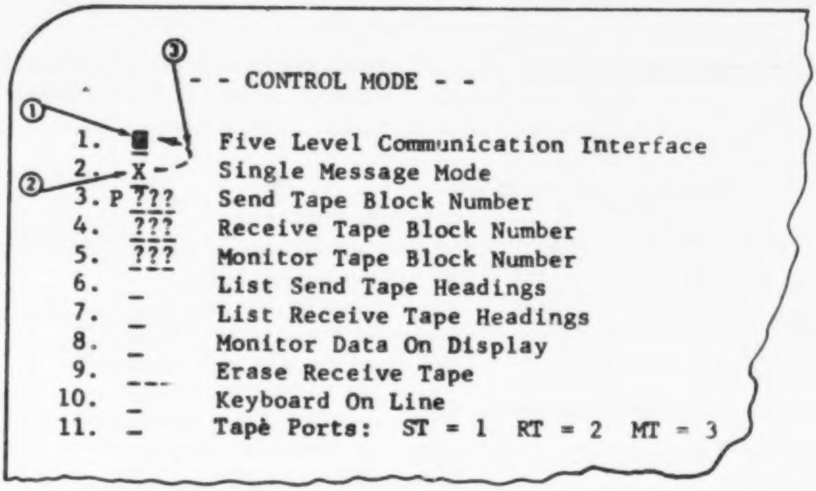
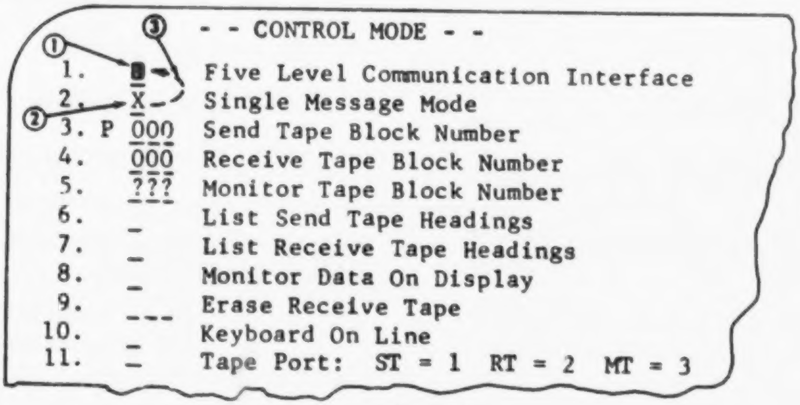
STEP	PROCEDURE	RESULTS
	 - - CONTROL MODE - - 1. ■ Five Level Communication Interface 2. X Single Message Mode 3. P ??? Send Tape Block Number 4. ??? Receive Tape Block Number 5. ??? Monitor Tape Block Number 6. _ List Send Tape Headings 7. _ List Receive Tape Headings 8. _ Monitor Data On Display 9. ___ Erase Receive Tape 10. _ Keyboard On Line 11. _ Tape Ports: ST = 1 RT = 2 MT = 3	
60.	Depress CONTROL MODE key.	Message on screen extinguishes, cursor goes to home position.
61.	Enter a line of "Quick Brown Fox". End line with ETX. Enter several new lines. Enter a line of "Now is the time". End with ETX.	Message appears on display as typed.
	Home cursor.	Cursor goes home.
	Depress PTR LCL.	PTR LCL lamp lights.
	Depress DISP SEND.	DISP SEND lamp lights.
	Depress DISP LCL.	DISP LCL lamp lights. Cursor moves across message and stops at character position after first ETX. Printer motor starts and printer copies Quick Brown Fox message. When cursor reaches first ETX DISP LCL lamp extinguishes.
62.	Depress DISP LCL again. **NOTE** **If option Z1 is installed, the cursor will go to the home position and the first message will be sent again.**	Cursor moves from present location to next ETX. Printer copies message.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE	RESULTS
63.	Depress PTR LCL.	PTR LCL lamp extinguishes.
	Depress DISP SEND.	DISP SEND lamp extinguishes.
	Depress CONTROL MODE key.	Prepared message extinguishes, and Control Message appears on display.
64.	Position cursor over X placed in line 2.	
	Depress SPACE BAR.	X is deleted.
	Depress LINE FEED.	Cursor returning to original position.
65.	Depress CONTROL MODE key.	Control message extinguishes and original typed message appears.
		Cursor in home position.
66.	Home cursor, depress CLEAR key to clear display.	
67.	Using cursor positioning key:	
	(1) position cursor to the first underline to the right of 2.	Cursor moves under direction of cursor control key.
	(2) Type an upper case X.	X appears, cursor moves one space to the right.
	(3) Depress LINE FEED key.	X remains, cursor returns to its original position.



```
   - - CONTROL MODE - -
 1.  █   Five Level Communication Interface
 2.  X_  Single Message Mode
 3. P 000 Send Tape Block Number
 4.  000 Receive Tape Block Number
 5.  ??? Monitor Tape Block Number
 6.  _   List Send Tape Headings
 7.  _   List Receive Tape Headings
 8.  _   Monitor Data On Display
 9.  ___ Erase Receive Tape
10.  _   Keyboard On Line
11.  _   Tape Port:  ST = 1  RT = 2  MT = 3
```

NOTE

For KDPM3 Line 5 will contain block number for the monitor tape cassette.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

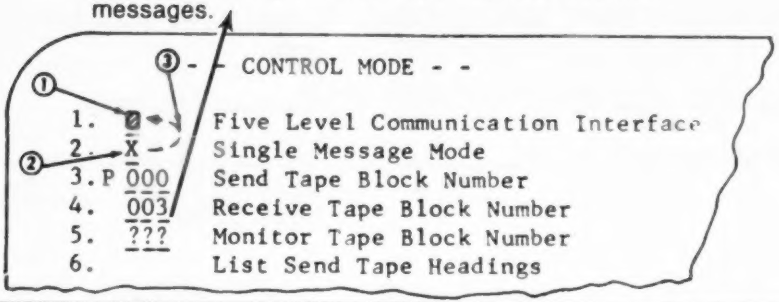
STEP	PROCEDURE	RESULTS
68.	Depress CONTROL MODE key.	Message on screen extinguishes, cursor goes t home position.
69.	Enter a line of "Quick Brown Fox". End line with ETX. Enter several new lines. Enter a line of "Now is the time". End with ETX.	Message appears on display as typed.
	Depress HOME.	Cursor goes home.
	Depress PTR LCL.	PTR LCL lamp lights.
	Depress REC TAPE LCL.	REC TAPE lamp lights.
	Depress DISP SEND.	DISP SEND lamp lights.
	Depress DISP LCL.	DISP LCL lamp lights.
		Cursor moves across message and stops at character position after first ETX. Printer motor starts and copies message REC TAPE positions cassette to next available recording block and records message.
		When cursor reaches the first ETX, DISP LCL will extinguish.
70.	Depress DISP LCL again. (See note in Step 62.)	Cursor moves from present position to next ET Printer and REC TAPE copy message as in Ste 69 above.
71.	Depress PTR LCL.	PTR LCL lamp extinguishes.
	Depress DISP SEND.	DISP SEND lamp extinguishes.
	Depress REC TAPE LCL.	REC TAPE LCL lamp extinguishes.
72.	Depress CONTROL MODE key.	Prepared message extinguishes and control mode message appears.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE	RESULTS
73.	(1) Using cursor positioning key, position cursor over X placed in line 2.	Cursor moves under direction of cursor control keys.
	(2) Depress SPACE bar key.	X is deleted.
	(3) Depress LINE FEED key.	Cursor returns to its original position.

NOTE

Rec Tape Block number has changed from 000 to 003 indicating the Rec Tape has recorded two messages.



```
- - CONTROL MODE - -

1. 0   Five Level Communication Interface
2. X   Single Message Mode
3.P 000  Send Tape Block Number
4.  003  Receive Tape Block Number
5.  ???  Monitor Tape Block Number
6.       List Send Tape Headings
```

STEP	PROCEDURE	RESULTS
74.	Depress CONTROL MODE key.	Control Mode message extinguishes, and original typed message appears. Cursor in home position.
75.	Depress PTR LCL.	PTR LCL lamp lights.
	Depress REC TAPE LCL.	REC TAPE LCL lamp lights.
	Depress DISP SEND.	DISP SEND lamp lights.
	Depress DISP LCL.	DISP LCL lamp lights.
		Cursor moves through messages until first ETX is reached.
		Printer and REC TAPE copy message.
		DISP LCL lamp extinguishes when the first ETX is reached:
	Depress DISP LCL again. (See Note in Step 62.)	Cursor moves to next ETX, and DISP LCL lamp extinguishes.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE	RESULTS
76.	Depress PTR LCL.	PTR LCL lamp extinguishes.
	Depress REC TAPE LCL.	REC TAPE LCL lamp extinguishes.
	Depress DISP SEND.	DISP SEND lamp extinguishes.
77.	Depress CONTROL MODE key.	Typed message extinguishes, and control message appears on display.
78.	Using the cursor control keys, position the cursor over the underline next to 7.	Cursor moves under control of cursor control keys.
	Type an upper case X.	X appears on display.
	Depress LINE FEED key.	The control mode message extinguishes, the REC TAPE rewinds, and the following appears on the display.

INDICATES
BLOCK NUMBER

```
001  THE QUICK BROWN FOX JUMPED

002  ←←≡←←≡←←≡ NOW IS THE TIME

003  THE QUICK BROWN FOX JUMPED

004  ←←≡←←≡←←≡ NOW IS THE TIME
```

First 56 characters of message in that block.

NOTE

When listing is complete, alarm will sound once. If no messages are recorded on tape, alarm will sound once and display will be blank.

STEP	PROCEDURE	RESULTS
79.	Depress SPACE BAR.	Tape heading listing extinguishes, and Control Mode message appears on display.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE	RESULTS
80.	Using the cursor control keys, position cursor:	
	(1) to character space to left of Rec Tape Block Number and enter an upper case R.	Cursor moves under control of cursor control key. R appears on display.
	(2) Position cursor over X in line 7 and depress Space Bar.	X is deleted from display.
	(3) Depress LINE FEED.	Cursor returns to its original position. Rec Tape rewinds. Three asterisks (***) appear while rewinding. When rewind is complete, 000 REC TAPE BLOCK NUMBER is displayed.
81.	Using the CURSOR CONTROL or TAB key:	
	(1) Position cursor over the underline next to line 11.	Cursor moves under control of the cursor positioning keys.
	(2) Enter an upper case X.	X appears on display.
	(3) Position cursor to "1" after ST = 1 in line 11.	Cursor moves under control of the cursor positioning keys.
	(4) Overwrite the "1" with a "2".	"2" appears on display.
	(5) Position cursor to "2" after RT = 2 in line 11.	Cursor moves under control of the cursor positioning keys.
	(6) Overwrite the "2" with a "1".	"1" appears on display.
	(7) Depress LINE FEED key.	Cursor returns to its original position in line 1.

NOTE

The above procedure has reassigned Cassette 1 as the Receive Cassette and Cassette 2 as the Send Cassette.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

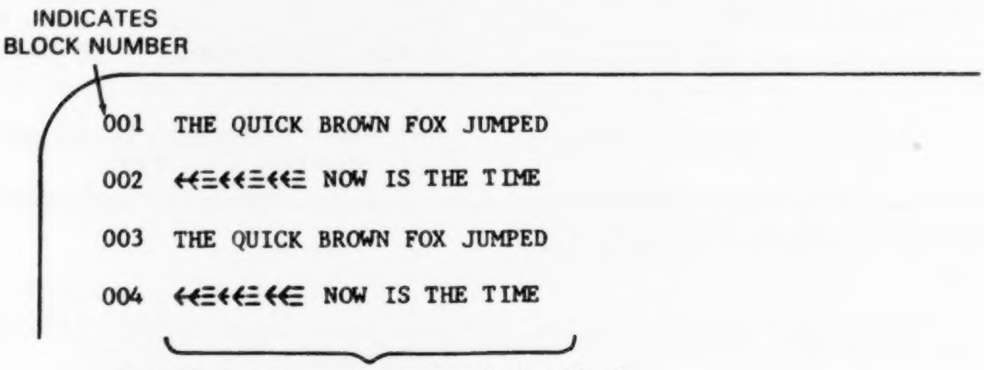
STEP	PROCEDURE	RESULTS
82.	Using the CURSOR CONTROL keys:	
	(1) Position cursor to first underline in row 6.	Cursor moves under control.
	(2) Enter an upper case X.	X appears on display.
	(3) Depress LINE FEED.	Control mode message extinguishes, and the Send Tape headings are listed.
	 001 THE QUICK BROWN FOX JUMPED 002 ←←≡←←≡←←≡ NOW IS THE TIME 003 THE QUICK BROWN FOX JUMPED 004 ←←≡←←≡←←≡ NOW IS THE TIME **First 56 characters of message in that block.** **NOTE** ● When listing is complete, alarm will sound once. If no messages are recorded on tape, alarm will sound once and display will be blank. ● At any time during the listing of Tape Headings, the space bar may be depressed, halting the Tape Heading listing. Depressing the space again will start the listings. ● If listing exceeds 24 lines (capacity of display), listing will stop at 24th line. Depressing the space bar will cause the next 24 listings to be displayed.	
83.	Depress SPACE BAR.	The Send Tape Heading listing extinguishes, and the control message appears on display.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE	RESULTS
84.	Using the CURSOR CONTROL keys:	
	(1) Position cursor over first numerical character in line 3.	Cursor moves under control of the cursor control keys.
	(2) Enter 001.	The current block number is overwritten with 001.
	(3) Depress LINE FEED.	Send Block Number changes counting down to 000 and then up to 001.
85.	Depress CONTROL MODE key.	Control Mode message extinguishes, and cursor returns to home position.
86.	Depress DISP LCL.	DISP LCL lamp lights.
	Depress REC TAPE LCL.	REC TAPE LCL lamp lights.
	Depress PTR LCL.	PTR LCL lamp lights.
	Depress SEND TAPE LCL.	The Send Tape transfers all its messages (4). The display will copy to first ETX, and DISP LCL will extinguish. The Printer and Rec Tape will copy all messages. The SEND TAPE LCL lamp will extinguish when the message transfer is completed.
87.	Depress REC TAPE LCL.	REC TAPE LCL lamp extinguishes.
	Depress PTR LCL.	PTR LCL lamp extinguishes.
	Depress HOME.	Cursor goes to home position.
	Depress CLEAR key.	Message is cleared from display.
88.	Depress CONTROL MODE key.	Send Tape message on display extinguishes, and Control Mode message appears.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE	RESULTS
89.	Using the CURSOR CONTROL keys:	
	(1) Position cursor over first numerical character in Send Tape Block Number.	Cursor moves under control of the cursor control keys.
	(2) Enter 001.	001 appears in Send Tape Block Number.
	(3) Position cursor over underline in line 8.	Cursor moves under control of cursor control key.
	(4) Enter an upper case X.	X appears on display.
	(5) Depress LINE FEED.	Send Tape rewinds to block 001.
		DISP LINE and DISP LCL lamps start flashing, indicating monitor data on display mode.
90.	Depress CONTROL MODE key.	Control Mode message extinguishes and blank display with cursor in home position is displayed.
91.	Depress REC TAPE LCL.	REC TAPE LCL lamp lights.
	Depress PTR LCL.	PTR LCL lamp lights.
	Depress DISP LCL.	DISP LCL lamp stays on steady Disp Line continues to flash.
	Depress SEND TAPE LCL.	SEND TAPE LCL lamp lights. Send Tape transmits all four messages recorded on it.
		Printer, Rec Tape, and Monitor copy all four messages.
92.	Depress REC TAPE LCL.	REC TAPE LCL lamp extinguishes.
	Depress PTR LCL.	PTR LCL lamp extinguishes.
	Depress DISP LCL.	DISP LCL starts to flash.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE	RESULTS
93.	Depress CONTROL MODE key.	Received message extinguishes, and Control message appears on display.
94.	Using the CURSOR CONTROL or TAB keys:	
	(1) Position cursor over P in line 3.	Cursor moves under control of the cursor control keys.
	(2) Enter an upper case R.	R overwrites P.
	(3) Position cursor over X in line 8, depress SPACE BAR.	X is deleted from display.
	(4) Position cursor to first underline in line 9.	
	Enter three upper case Xs.	XXX appears on display.
	(5) Depress LINE FEED.	DISP LINE and DISP LCL lamps stop flashing and are extinguished. Send and Rec Tapes rewind. "Three asterisks" (***) appear in the tape block numbers whene rewind is completed, 000 appears in the Rec Tape Block Number. 000 appears in the Send Block Number.
95.	Using the CURSOR CONTROL keys:	
	(1) Position the cursor to the underline next to 11 in line 11.	Cursor moves under control of the cursor positioning keys.
	(2) Enter an upper case X.	X appears on display.
	(3) Position the cursor to the "2" after ST = 2.	Cursor moves under control of the cursor positioning keys.
	(4) Overwrite the "2" with a "1".	"1" appears on display.
	(5) Position the cursor to the "1" after RT = 1.	Cursor moves under control of the cursor positioning keys.
	(6) Overwrite the "1" with a "2".	"2" appears on display.
	(7) Depress the LINE FEED key.	Cursor returns to its original position in line 1.

TABLE 7-4 OFF LINE OPERATIONAL CHECKOUT (CONTINUED)

STEP	PROCEDURE	RESULTS
95. (cont.)	**NOTE** The above procedure has reassigned Cassette 1 as the Send Cassette and Cassette 2 as the Receive Cassette.	
96.	Using the cursor positioning or tab key, position the cursor to the first underline following 9 in line 9.	Cursor moves under control of the cursor positioning keys.
	Enter three upper case Xs.	XXX appears on display.
	Depress the LINE FEED key.	Cursor returns to its original position in line 1. REC tape (Cassette 2) rewinds. Three asterisks appear in the Tape Block Number while rewind is taking place.
	NOTE The off-line checkout procedure of this table does not check the operation of the monitor tape cassette since the monitor tape cassette (Cassette 3) has no local mode of operation.	

7-4. MONITOR TAPE CASSETTE CHECKOUT. To perform an on-line check of the monitor tape cassette drive, proceed as follows:

a. Send a sample test message to on-line station.
b. After message has been sent, rewind cassette 3 (Mon tape), and reassign to the send cassette.
c. Initiate a local send tape to display function.
d. Message on the display can then be checked to insure the monitor tape correctly copied the test message.
e. Rewind the tape, reassign cassette 3 to be the receive tape.
f. Perform the erase function on cassette 3 and reassign cassette 3 to be the monitor tape cassette.

APPENDIX A
REFERENCES

A-1. SCOPE

This Appendix lists all forms, field manuals, technical manuals, and miscellaneous publications referenced in this manual.

A-2. FORMS

Report of Discrepancy	SF 364
Quality Deficiency Report	SF 368
Recommended Changes to Publications and Blank Form	DA Form 2028/2028-2
Discrepancy in Shipment Report	SF 361

A-3. FIELD MANUALS

Destruction to Prevent Enemy Use	FM 5-25
First Aid for Soldiers	FM 21-11

A-4. TECHNICAL MANUALS

The Army Maintenance Management System (TAMMS)	TM 38-750
Administrative Storage Requirements	TM 740-90-1
Packing and Unpacking Instruction	AR 746-1

A-5. MISCELLANEOUS PUBLICATIONS

Consolidated Index of Army Publications and Blank Forms	DA Pam 310-1
Report of Transportation Discrepancies in Shipments	AR 55-38
Report of Packaging and Handling Deficiencies	AR 735-11-2

APPENDIX B
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

B-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for Tempest Model 40/8B Data Terminal: AN/GGR-3A(V)1,2,3,8,11,12; AN/GGC-55(V)1,2,; AN/GGC-57A(V)3,4,8; AN/GGC-59(V)1,3,5; and AN/GGC-62(V)5,6,7. It authorizes categorics of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. Explanation of Format for Maintenance Allocation Chart

a. Group Number. Group numbers correspond to the reference designation prefix assigned in accordance with ASA Y32.16, Electrical and Electronics Reference Designations. They indicate the relation of listed items to the next higher assembly.

b. Component Assembly Nomenclature. This column lists the item names of component units, assemblies, subassemblies, and modules on which maintenance is authorized.

c. Maintenance Function. This column indicates the maintenance category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to perform that function at higher categories. Maintenance functions will be limited to and defined as follows:

1. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

2. Test. To verify seviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

3. Service. Operators required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

4. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified standards.

5. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

6. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisions of two instruments, one of which is certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

7. *Install.* The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

8. *Replace.* The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

9. *Repair.* The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

10. *Overhaul.* That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e. DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

11. *Rebuild.* Consists of those service/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipment/components.

d. Column 4, Maintenance Category. The codes used represent the various maintenance categories as follows:

Code	Maintenance Category
C	Operator/crew
O	Organizational maintenance
F	Direct support maintenance
H	General support maintenance
D	Depot maintenance

e. Column 5, Tools and Equipment. The number appearing in this column refer to specific tools and equipment which are identified by these numbers in Section III.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remarks in Section IV. Remarks which are pertinent to the item opposite the particular code.

B-3. Explanation of Format for Tool and Test Equipment Requirements

The columns in the tools and test equipment requirements chart are as follows:

a. Tools and Equipment. The numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool for the maintenance function.

b. Maintenance Category. The codes in this column indicate the maintenance category normally allocated the facility.

c. Nomenclature. This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

d. Federal Stock Number. This column lists the Federal stock number.

e. Tool Number. Not used.

B-4. Explanation of Format for Remarks Sheet

Reference codes are related to Remarks column in Section II.

SECTION II MAINTENANCE ALLOCATION CHART

FOR

MODEL 40 TELETYPE DATA TERMINAL: AN/GGR 3A(V)1,2,3,8,11,12, AN/GGC-55(V)1,2, AN/GGC-57A(V)3,4,8, AN/GGC-59(V)1,3,5, AN/GGC-62(V)5,6,7

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
00	MODEL 40 TELETYPE DATA TERMINAL:	Inspect		0.1					
	AN/GGR-3A(V)1,2,3,8,11,12	Inspect			0.2				A
	AN/GGC-55(V)1,2	Test		0.1					B
	AN/GGC-57A(V)3,4,8 AN/GGC-59(V)1,3,5	Test			0.3			2,3,5,6, 7,10	C
	AN/GGC-62(V)5,6,7	Service		0.2				1	
		Adjust			0.2			2,3,6	
		Install		0.2				1	
		Replace		0.2				1	
		Repair			0.1			1	D
		Repair			0.2			2,3,5,6 7,10	F
		Repair				5.0		2,3,5,6, 7, 10	F, G
		Overhaul					60.0	2,3,5,6, 1, 17	J
01	CONTROLLER	Inspect			0.1				A
	40C430ABD025	Test		0.1					
	40C431ABE026 40C432ABF027	Test			0.3			2,3,5,6, 7, 10	C
	40C435AEE091	Replace		0.1				1	
		Repair			0.2			2,3,5,6,7	E
		Repair				2.0		2,3,5,6,7	F, G, J
0101	POWER SUPPLY	Replace			0.1			2, 3	
	40PSU103	Repair			0.4			2,3,5,6, 7, 10	E
		Repair				1.6		2,3,5,6, 7, 10	G, J
010101	FILTER ASSEMBLY	Replace			0.1			2, 3	
	405936	Repair			0.4			2,3,5,6,	
010102	CIRCUIT CARDS	Inspect			0.1				A
	( )	Test			0.3			2,3,5,6, 7, 10	C
		Replace			0.2			2, 3	
		Repair				0.5		2,3,5,6, 7,10,13	G, J
0102	FILTER ASSEMBLY	Replace			0.1			2,3	
	402063	Repair			0.4			2,3,5,6	
0103	CIRCUIT CARDS	Inspect			0.1				A
	( )	Test			0.3			2,3,5,6, 7,10	C
		Replace			0.2			2,3	
		Repair				0.5		2,3,5,6, 7,10,13	G, J

SECTION II MAINTENANCE ALLOCATION CHART

FOR

MODEL 40 TELETYPE DATA TERMINAL: AN/GGR 3A(V)1,2,3,8,11,12, AN/GGC-55(V)1,2, AN/GGC-57A(V)3,4,8, AN/GGC-59(V)1,3,5, AN/GGC-62(V)5,6,7

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
02	RFI MONITOR UNIT 40MN202RA	Inspect			0.2				A
		Test		0.1					
		Test			0.2			2,3,5,6, 7,10,11	C
		Adjust			0.2			2,3,6	H, I
		Replace		0.2				1	
		Repair			1.4			2,3,5,6, 7,10,11	E
		Repair				2.0		2,3,5,6, 7,10,11	F, G
0201	POWER DISTRIBUTION ASSEMBLY 341795	Replace			0.2			2,3	
		Repair			0.4			2,3,5,6, 7	
0202	HIGH VOLTAGE & VIDEO ASSEMBLY 402254	Replace			0.2			2, 3	
		Repair			0.4			2,3,5,6, 7	E
		Repair				1.0		2,3,5,6, 7	G, J
020201	REAR COVER ASSEMBLY 405861	Inspect			0.1				A
		Replace			0.2			2, 3	
		Repair			0.4			2, 3	
02020101	FILTER, CRT ASSEMBLY 410544	Inspect			0.1				A
		Test			0.3			2,3,5,6, 7,10	C
		Replace			0.2			2, 3	
		Repair				0.5		2,3,5,6, 7,10,13	G, J
020202	CIRCUIT CARDS ( )	Inspect			0.1				A
		Test			0.3			2,3,5,6, 7,10	C
		Replace			0.2			2, 3	
		Repair				0.5		2,3,5,6, 7,10,13	G, J
0203	SHIELD ASSEMBLY 405702	Replace			0.2			2, 3	
		Repair			0.4			2,3,5,6,7	
0204	HEAT SINK ASSEMBLY 405709	Replace			0.2			2, 3	
		Repair			0.4			2,3,5,6,7	
0205	HIGH VOLTAGE PLATE ASSEMBLY 405859	Replace			0.2			2, 3	
		Repair			0.4			2,3,5,6,7	
0206	REGULATOR ASSEMBLY 405873	Replace			0.2			2, 3	
		Repair			0.4			2,3,5,6,7	
0207	CIRCUIT CARDS ( )	Inspect			0.1				A
		Test			0.3			2,3,5,6, 7,10	C
		Replace			0.2			2, 3	
		Repair				0.5		2,3,5,6, 7,10,13	G, J

SECTION II MAINTENANCE ALLOCATION CHART

FOR

MODEL 40 TELETYPE DATA TERMINAL: AN/GGR 3A(V)1,2,3,8,11,12, AN/GGC-55(V)1,2, AN/GGC-57A(V)3,4,8, AN/GGC-59(V)1,3,5, AN/GGC-62(V)5,6,7

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
03	OPCON 40K002RAA 40K103RCA 40K103RCB 40K103RCC 40K108RDE	Inspect			0.2				A
		Test		0.1					B
		Test			0.3			2,3,5,6, 7,8,10	C
		Adjust			0.2			2,3,6	I
		Replace		0.1				1	
		Repair			0.4			2,3,5,6, 7,8,10	E
		Repair				1.2		2,3,5,6, 7,8,10	F, G
0301	KEYTOPS ( )	Replace			0.2			2, 3	
0302	CIRCUIT CARDS ( )	Inspect			0.1				A
		Test			0.3			2,3,5,6, 7, 10	
		Replace			0.2			2, 3	
		Repair				0.5		2,3,5,6, 7,10,13	G, J
04	CASSETTE UNIT 4016RA001RA	Inspect			0.1				A
		Test		0.1					B
		Test			0.3			2,3,5,6, 7,10	C
		Adjust			0.5			2,3,4	I
		Replace		0.1				1	
		Repair			0.4			2,3,5,6, 7,10	E
		Repair				1.7		2,3,5,6, 7,10	F, G
0401	CABINET ASSEMBLY 40CAB102RA	Replace			0.2			2, 3	
		Repair			0.8			2,3,5,6,7	
040101	INTERFACE ASSEMBLY 408598	Replace			0.2			2, 3	
		Repair			0.9			2,3,5,6, 7,10	E
		Repair				1.2		2,3,5,6, 7,10	F,G,J
0402	CASSETTE DRIVE ASSEMBLY 40CD102	Replace			0.2			2, 3	
		Repair			0.5			2, 3	
040201	POWER SUPPLY 406101	Replace			0.2			2, 3	
		Repair			0.6			2,3,5,6, 7,10	E
		Repair				0.5		2,3,5,6, 7,10	F,G,J
04020101	REGULATOR CIRCUIT CARD ASSEMBLY 410043	Inspect			0.1				A
		Test			0.3			2,3,5,6, 7,10	C
		Replace			0.2			2, 3	
		Repair				0.5		2,3,5,6, 7,10,13	G, J

SECTION II MAINTENANCE ALLOCATION CHART

FOR

MODEL 40 TELETYPE DATA TERMINAL: AN/GGR 3A(V)1,2,3,8,11,12, AN/GGC-55(V)1,2, AN/GGC-57A(V)3,4,8, AN/GGC-59(V)1,3,5, AN/GGC-62(V)5,6,7

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQPT.	(6) REMARKS
040202	DRIVE LOGIC CARD ASSEMBLY	Inspect			0.1				A
	410764	Test			0.3			1,3,5,6, 7,10	C
		Replace			0.2			2, 3	
		Repair				0.5		2, 3, 5, 6, 7,10,13	G, J
040203	MOTOR ASSEMBLY	Repair			1.0			2,3,5,6, 7,10	E
	403303								
040204	HEAD ASSEMBLY	Repair			0.5			2,3,5,6, 7,10	E
	403241								
05	CABINET ASSEMBLY	Inspect			0.1				A
	40CAB202RC	Test		0.2					B
	40CAB252RA	Test			0.3			2,3,5,6, 7,10	C
	40CAB352RC								
	40CAB354RA	Replace		0.2				1	
	40CAB202RA	Repair			0.4			2,3,4,5, 6,7,10	E
	40CAB352RA								
		Repair				2.6		2,3,4,5, 6,7,10	F, G
0501	FILTER CABLE ASSEMBLY	Replace			0.2			2, 3	
	402075	Repair			0.4			2,3,5,7	
0502	INDUCTOR ASSEMBLY	Replace			0.2			2, 3	
	402076	Repair			0.4			2,3,4,5,6	
0503	CABLE ASSEMBLIES	Replace			0.1			2, 3	
	( )	Repair			0.4			2,3,6,7	
0504	CIRCUIT CARD ASSEMBLY	Inspect			0.1				A
	410551	Test			0.3			2,3,5,6, 7,10	C
	410549	Replace			0.2			2, 3	
		Repair				0.5		2,3,5,6, 7,10,13	G, J
06	PEDESTAL ASSEMBLY	Inspect			0.1				A
	40CAB903RM	Test		0.2					B
	40CAB903RK	Test			0.3			2,3,5,6, 7,10	C
	40CAB903RH								
	40CAB902AA	Replace		0.2				1	
	40CAB903RJ	Repair			0.4			2,3,4,5, 6,7,10	E
	40CAB903RP								
	40CAB903RL	Repair				2.7		2,3,4,5	F, G
0601	INTERFACE ASSEMBLY	Replace			0.2			2, 3	
	405932	Repair			0.6			2,3,5,6,7	E
	405628	Repair				1.6		2,3,5,6,7	F,G,J
	405017								
	405612								

SECTION II MAINTENANCE ALLOCATION CHART

FOR

MODEL 40 TELETYPE DATA TERMINAL: AN/GGR 3A(V)1,2,3,8,11,12, AN/GGC-55(V)1,2, AN/GGC-57A(V)3,4,8, AN/GGC-59(V)1,3,5, AN/GGC-62(V)5,6,7

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
060101	CIRCUIT CARDS	Inspect			0.1				A
	( )	Test			0.3			2,3,5,6, 7,10	C
		Replace			0.2			2, 3	
		Repair				0.5		2,3,5,6, 7,10,13	G, J
060102	TRANSFORMER ASSEMBLY	Replace			0.2			2, 3	
	402077	Repair			0.6			2,3,5,6, 7,10	
07	PRINTER	Inspect			0.1				A
	40P101AB	Test		0.1					B
	40P151AA 40P151AB	Test			0.3			2,3,4,9, 10,12	C
	40P154AB	Replace		0.1				1	
	40P201AL 40P154AA	Repair			0.2			2,3,4,5, 7,9,10,12	E
	40P202AL	Repair				0.5		2,3,4,5, 7,9,10,12	F, G
0701	PRINTER ASSEMBLY	Inspect			0.1				A
	400180 402425	Test			0.2			2,3,4,9, 10,12	C
	408656	Replace			0.2			2, 3	
	402700	Repair			0.4			2, 3	E
		Repair				1.6		2,3,5,6, 7,10,12	F,G,J
070101	PRINT HEAD ASSEMBLY	Replace			0.4			2, 3	
	400001	Replace			0.4			2, 3	
	402680	Repair			0.7			2,3,4,9	
070102	LINE FEED ASSEMBLY	Replace			0.4			2, 3	
	400470 402621	Repair			0.6			2,3,4	
070103	FORM FEED ASSEMBLY	Replace			0.2			2, 3	E
	402507 402508	Repair			0.6			2,3,4	
070104	COVER ASSEMBLY	Replace			0.2			2, 3	
	400903	Repair			0.4			2, 3	
070105	POWER SUPPLY SUBASSEMBLY	Replace			0.2			2, 3	
	400908	Repair			0.4			3,6,7	E
		Repair				1.6		2,3,6,7 10	F,G,J
07010501	CIRCUIT CARD ASSEMBLY	Inspect			0.1				A
	410150	Test			0.3			2,3,5,6, 7,10	C
		Replace			0.2			2, 3	
		Repair				0.5		2,3,5,6, 7,10,13	G, J

SECTION II MAINTENANCE ALLOCATION CHART

FOR

MODEL 40 TELETYPE DATA TERMINAL: AN/GGR 3A(V)1,2,3,8,11,12, AN/GGC-55(V)1,2, AN/GGC-57A(V)3,4,8, AN/GGC-59(V)1,3,5, AN/GGC-62(V)5,6,7

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
070106	POWER MODULE ASSEMBLY 402978 402720	Replace			0.1			2, 3	
		Repair			0.4			2,3,5,6 7,10	E
		Repair				1.6		2,3,5,6, 7,10	F,G,J
07010601	CIRCUIT CARDS ( )	Inspect			0.1				A
		Test			0.3			2,3,5,6, 7,10	C
		Replace			0.2			2, 3	
		Repair				0.5		2,3,5,6	G, J
070107	RIBBON FEED MECHANISM 402420	Replace			0.1			2, 3	
		Repair			0.4			2,3,4	
070108	AC INPUT MOTOR CONTROL 402632	Replace			0.1			2, 3	
		Repair			0.4			2,3,6	
070109	CARD ASSEMBLY (MOTOR CONTROL) 410155	Inspect			0.1				A
		Test			0.2			2,3,5,6, 7,10	C
		Replace			0.1			2, 3	
		Repair				0.5		2,3,5,8, 7,10,13	G, J
0702	CARRIER 400629 400780 400645	Replace			0.2			2, 3	
		Repair			0.4			2,3,4	E
0703	CIRCUIT CARDS ( )	Inspect			0.1				A
		Test			0.3			2,3,5,6, 7,10	C
		Replace			0.2			2, 3	
		Repair				0.5		2,3 5,6, 7,10,13	G, J
08	CABLES 402236 405711 405785 408600 405710 405712 405780 405781 405782	Replace		0.1				1	
		Repair			0.4			2,3,6,7	

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS

FOR

MODEL 40 TELETYPE DATA TERMINAL: AN/GGR-3A(V)1,2,3,8,11,12, AN/GGC-55(V)1,2, AN/GGC-57A(V)3,4,8, AN/GGC-59(V)1,3,5, AN/GGC-62(V)5,6,7

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	O	Tool kit, Electronic Equipment TK-101/G	5180-00-064-5178	
2	F,H	Tool Kit, Electronic Equipment TK-100/G	5180-00-605-0079	
3	F,H	Tool Kit, Electronic Equipment TK-105/G	5180-00-610-8177	
4	F,H	Tool Kit Equipment TD-503	5180-00-356-4602	
5	F,H	Oscilloscope, AN/USM-281C	6625-00-106-9622	
6	F,H	Digital Multimeter, Fluke 8600A	6625-00-414-6628	
7	H	Test Set, Null Balance Earth Test TS-3221/U	6625-00-910-0049	
8	H	Cable Extension (401641)	Fabricated by Direct Support	
9	H	Armature Pickup Test Set (18282D)	6625-01-098-2769	
10	H	Monitor Test Set (18239D)	6625-01-092-7527	
11	H	Message Generator (18231D)	6625-01-097-9191	
12	H	Repair Kit, Printed Wiring Board MK-772/U	5999-00-757-7072	
13	H	Logic Extension Cable (18232D)	6625-01-099-1126	
14	H	Printer Test Set	5815-01-042-0337	
15	H	Cable	5815-01-068-1021	
16	H	Cable	5815-01-081-6621	
17	H	Cable	5875-01-081-7008	

SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	VISUAL INSPECTION.
B	OPERATIONAL CHECK.
C	FUNCTIONAL TESTING ACCORDING TO TECHNICAL MANUAL.
D	BY REPLACEMENT OF FUSES, INDICATOR LIGHTS AND KNOBS.
E	BY REPLACEMENT OF MODULES, UNITS, ASSEMBLIES.
F	FAULT ISOLATION OF DEFECTIVE MODULES, UNITS, ASSEMBLIES.
G	THE REPAIR OF CIRCUIT CARDS AUTHORIZED AT DIRECT SUPPORT (F) FOR INSCOM; *
H	ELECTRICAL ADJUSTMENTS WILL BE PERFORMED ACCORDING TO TECHNICAL MANUAL.
I	MECHANICAL ADJUSTMENTS WILL BE PERFORMED ACCORDING TO TECHNICAL MANUAL.
J	THE AIR FORCE WILL PROVIDE CREDIT EXCHANGE FOR THOSE PCB'S AND ASSEMBLIES WHICH CANNOT BE REPAIRED AT THE LOWER LEVEL.
*	For other than INSCOM, Army units are authorized for repair of circuit cards at GS.

APPENDIX C

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS (BII) LISTS

SECTION I. INTRODUCTION

C-1. Scope

This appendix lists components of end item and basic issue items for the Tempest Model 40/8B Data Terminal to help you inventory items required for safe and efficient operation.

C-2. General

The components of End Item and Basic Issue Items Lists are divided into the following sections:

a. *Section II.Components of End Item.* This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. *Section III.Basic Issue Items.* These are the minimum essential items required to place the Tempest Model 40/8B Data Terminal in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the Tempest Model 40/8B Data Terminal during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

C-3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

a. *Column (1) - Illustration Number (Illus Number).* This column indicates the number of the illustration in which the item is shown.

b. *Column (2) - National Stock Number.* Indicates the National stock number assigned to the item and will be used for requisitioning purposes.

c. *Column (3) - Description.* Indicates the Federal item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number. If item needed differs for different models of this equipment, the model is shown under the "Usable On" heading in this column. These codes are identified as:

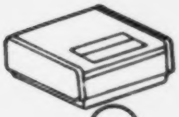
CODE	USED ON
PAA	AN/GGR-3A(V)1
PBA	AN/GGR-3A(V)2
PCA	AN/GGR-3A(V)3

CODE	USED ON
PDA	AN/GGR-3A(V)8
PEA	AN/GGR-3A(V)11
PFA	AN/GGR-3A(V)12
PAB	AN/GGR-55(V)1
PBB	AN/GGR-55(V)2
PAC	AN/GGC-57A(V)3
PBC	AN/GGC-57A(V)4
PCC	AN/GGC-57A(V)8
PAD	AN/GGC-59(V)1
PBD	AN/GGC-59(V)3
PCD	AN/GGC-59(V)5
PAE	AN/GGC-62(V)5
PBE	AN/GGC-62(V)6
PCE	AN/GGC-62(V)7

d. Column (4) - Unit of Measure (U/M). Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

e. Column (5) - Quantity required (Qty rqr). Indicates the quantity of the item authorized to be used with/on the equipment.

SECTION II. COMPONENTS OF END ITEM



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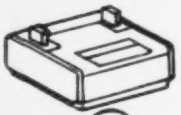

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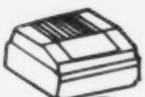

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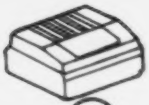

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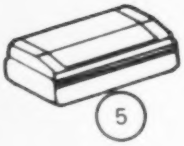

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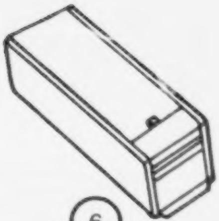

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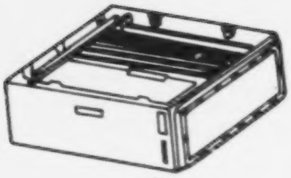

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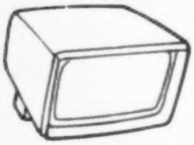

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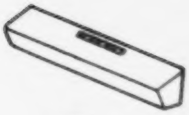

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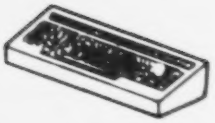

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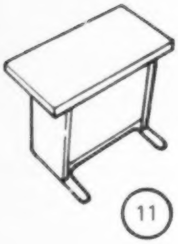

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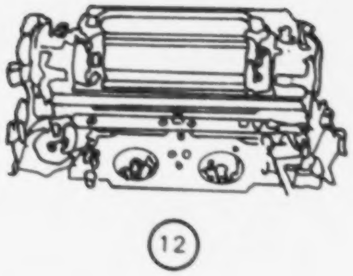

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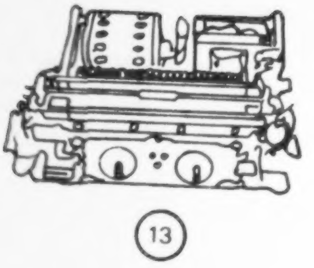

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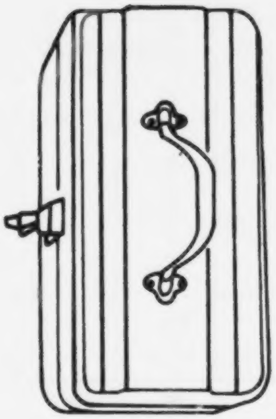
SECTION II. COMPONENTS OF END ITEM - CONTINUED

(1) Illustration Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable On Code	(4) U/M	(5) QTY rqr
1	To be supplied	CABINET, FRICTION FEED PRINTER (59433) 40CAB202/RC	PAD,PCD	EA	1
2	To be supplied	CABINET, FRICTION FEED PRINTER (59433) 40CAB252/RA	PAB,PBB PAD,PBD,PCD,PAE,PBE,PCE	EA	1
3	To be supplied	CABINET, TRACTOR FEED PRINTER (59433) 40CAB352/RA	PAA, PBA PCA,PEA,PFA,PAC,PBC,PCC	EA	1
4	To be supplied	CABINET, TRACTOR FEED PRINTER (59433) 40CAB352/RC	PBD,PAE, PCE,PBE	EA	1
5	To be supplied	CABINET, TRACTOR FEED PRINTER (59433) 40CAB354/RA	PDA	EA	1
6	5815-01-060-1747	CASSETTE, DRIVE W/COVER (59433) 4016RA001RA	PAE,PBE, PCE	EA	V
7	To be supplied	CONTROLLER		EA	1
		(59433) 40C432ABF027	PAA,PBA,PCA,PDA,PEA,PFA		
		(59433) 40C430ABD025	PAB,PBB,PAD,PBD,PCD		
		(59433) 40C431ABE026	PAC,PBC,PCC		
		(59433) 40C435AEE091	PAE,PBE,PCE		
8	5815-01-060-1750	MONITOR, DISPLAY (59433) 40MN202RA	PAB,PBB,PAD,PBD,PCD,PAE, PBE,PCE	EA	1
9	To be supplied	OPERATOR CONSOLE (59433) 40K002RAA	PAA,PBA,PCA,PDA,PEA,PFA	EA	1
10		OPERATOR CONSOLE		EA	1
	5815-01-060-0360	(59433) 40K103RCA	PAB,PBB		
	5815-01-060-0340	(59433) 40K103RCC	PAD,PBD,PCD		
	5815-01-035-1153	(59433) 40K103RCB	PAC,PBC,PCC		
	5815-01-069-3328	(59433) 40K108RDE	PAE,PBE,PCE		
11	To be supplied	PEDESTAL		EA	1
		(59433) 40CAB902AA	PAD,PBD,PCD,PAE,PBE,PCE		
	5815-01-063-9050	(59433) 40CAB903RH	PCD,PCE		
		(59433) 40CAB903RJ	PAA,PCA,PEA		
		(59433) 40CAB903RK	PAB,PAC,PAD,PAE,PBE		
		(59433) 40CAB903RL	PBA,PFA		
		(59433) 40CAB903RM	PBB,PBC		
		(59433) 40CAB903RP	PDA		

SECTION II. COMPONENTS OF END ITEM (CONTINUED)

(1) Illustration Number	(2) National Stock Number	(3) Description FSCM and Part Number	(3) Usable On Code	(4) U/M	(5) QTY rqr
12	To be supplied	PRINTER, TRACTOR (59433) 40P151AB (59433) 40P151AA (59433) 40P201AL (59433) 40P154AB	 PAA,PBA,PAD PCA,PAC,PBC,PBD PDA PEA,PFA,PCC,PAE,PBE,PCE	EA	1
13	To be supplied	PRINTER, FRICTION (59433) 40P101AB	 PCD	EA	1

SECTION III. BASIC ISSUE ITEMS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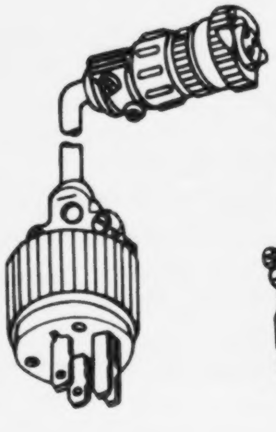
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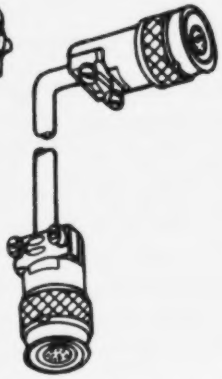
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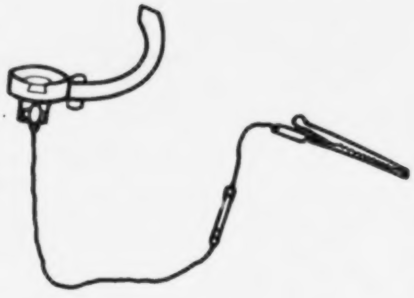
4

(1) Illustration Number	(2) National Stock Number	(3) Description FSCM and Part Number	Usable On Code	(4) U/M	(5) QTY rqr
*1	5180-00-064-5178	TOOL KIT, ELECTRONIC EQUIPMENT (59433) TK-101/G		EA	1
2	To be supplied	CABLES (59433) 405710		EA	1
2	5815-01-063-9024	(59433) 405711	PAA, PBA,PCA,PDA,PEA,PFA,PAC,PBC PCC,PAD,PBD,PCD,PAE,PBE,PCE	EA	1
2	5995-01-065-7527	(59433) 408600	PAE,PBE,PCE	EA	V
2	To be supplied	(59433) 405712	PAB,PBB,PAD,PBD,PCD,PAE,PBE,PCE	EA	1
3	5815-01-066-8259	(59433) 405780		EA	1
3	5815-01-069-5840	(59433)-405781	PAA,PBA,PCA,PDA,PEA,PFA,PAC, PBC,PCC	EA	1
3	5815-01-065-2415	(59433)-405785	PAA,PBA,PCA,PDA,PEA,PFA,PAC,PBC PCC,PAD,PBD,PCD,PAE,PBE,PCE	EA	V
3	5815-01-026-9108	(59433)-405782	PAB,PBB,PAD,PBD,PCD,PAE,PBE,PCE	EA	1
3	5815-01-065-2416	(59433)-402236	PAD,PBD,PCD,PAE,PBE,PCE	EA	1
*4	5815-01-039-6324	STATIC DISCHARGE STRAP (59433)-346392		EA	1

*Item is not issued initially with the set. Indicated quantity must be seperately requisitioned.

APPENDIX E

EXPENDABLE SUPPLIES AND MATERIALS LIST

SECTION I. INTRODUCTION

E-1. Scope

This Appendix lists expendable supplies and materials you will need to operate and maintain the Tempest Model 40/8B Data Terminal. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

E-2. Explanation of Columns

a. Column (1) - Item number. This number is assigned to the entry in the listing and is referenced in the narrative instructions to identify the material (e.g., "Use cleaning compound, item 6, App. D").

b. Column (2) - Level. This column identifies the lowest level of maintenance that requires the listed item.

C - Operator/Crew
O - Organizational Maintenance
F - Direct Support Maintenance
H - General Support Maintenance

c. Column (3) - National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column (4) - Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the Federal Supply Code for Manufacturer (FSCM) in parentheses followed by the part number.

e. Column (5) - Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

APPENDIX E. EXPENDABLE SUPPLIES AND MATERIALS LIST(CONTINUED)

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) U/M
1	O	5895-01-061-6468	Bobbin (cleaner, tape) P/N 403238	EA
2	C	5835-01-088-4127	Cassette P/N 403580	EA
3	C	To be supplied	Head, cleaner P/N 337401	6 oz.
4	C	7530-00-145-0414	paper, tractor 132 column	EA
5	C	7510-01-025-8496	Ribbon 402444	EA
6	C	6850-00-105-3084	Freon, TF Degreaser	16 oz.

GLOSSARY

Section I. ABBREVIATIONS

ac	Alternating current
ack	Acknowledge
afr	Air Force Regulation
ar	Army Regulation
ascii	American National Standard Code for Information Interchange
bel	Bell
bs	Backspace
can	Cancel
cd	Cord
char	Character
cmp	Center Message Processor
cntrl	Control
cr	Carriage Return
dc	Direct Current
dc1	Device Control 1
del	Delete
disp	Display
disrep	Discrepancy in Shipment Report
dlar	Defense Logistics Agency Regulation
dle	Data Link Escape
eia	Electronic Industries Assoication
eir	Equipment Improvement Recommendations
em	End of Medium
enq	Enquiry
eot	End of Transmission
esc	Escape
etb	End of Transmission Block
etx	End of Text
f	Farenheit
ff	Form Feed
fm	Field Manual
fs	File Separator
gs	Group Separator
ht	Horizontal Tabulation
insrt	Insert
kd	Keyboard Display
kdp	Keyboard Display Printer
kdpm	Keyboard Display Printer Magnetic
kp	Keyboard Printer
kpd	Keyboard Printer Display
lcl	Local
lf	Line Feed
mdcs	Maintenance Data Collection Subsystem
mon	Monitor
mos	Metal Oxide Semiconductor

GLOSSARY — CONTINUED

Section 1. ABBREVIATIONS

nak	Negative acknowledge
navsupinst	Navy supply instruction
navmatinst	Navy material instruction
nl	New line
nul	Null
oem	Original equipment manufacturer
opcon	Operator console
pol	Polling
plm	Print local mode
pmcs	Preventive maintenance checks & services
ptr	Printer
rd	Read display
rec	Receive
ro	Receive only
rod	Report of discrepancy
rop	Receive only printer
rs	Record separator
sf	Standard form
si	Shift in
so	Shift out
soh	Start of heading
sp	Space
s/r	Send receive
ssi	Standard serial interface
st	Send tape
sub	Substitute
syn	Synchronous idle
vdc	Volts direct current
vt	Vertical tabulation
us	Unit separator

Section II. DEFINITION OF UNUSUAL TERMS

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TM 11-5840-340-12	23 Jan 74	Radar Set AN/[illegible]S-76

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PAGE NO.	PARA-GRAPH	FIGURE NO.	TABLE NO.	IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:
2-25	2-28			Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1°. REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of [illegible] knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.
3-10	3-3		3-1	Item 5, Function column. Change "2 db" to "3db." REASON: The adjustment procedure for the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.
5-6	5-8			Add new step f.1 to read, "Replace cover plate removed in step e.1, above." REASON: To replace the cover plate.
		FO3		Zone C 3. On J1-2, change "+24 VDC to "+5 VDC." REASON: This is the output line of the 5 VDC power supply. + 24 VDC is the input voltage.

SAMPLE

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